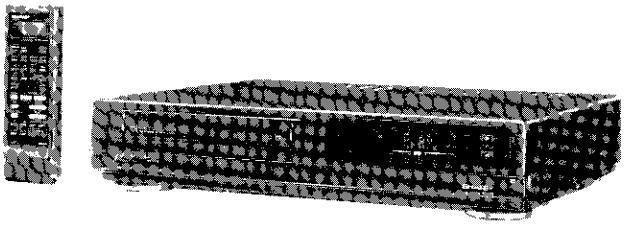
SHARP SERVICE MANUAL

S21W6VC-H81HM

VHS VIDEO CASSETTE RECORDER



MODEL VC-H81HM

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

SPECIFICATIONS

Format:	VHS PAL standard
Video recording system:	Two rotary head helical scan system
Video signals:	PAL colour and B/W signals, 625 lines
Recording/playing time:	4 hours max. with SHARP E-240 tape(SP)
Tape width:	12.7 mm
Tape speed:	23.39 mm/sec.(SP)
Antenna:	75 ohm unbalanced
Receiving channel:	UHF channel 21 – 69
RF converter output signal:	UHF channel 30 – 39 (adjustable). Preset to 591.25MHz
Power requirement:	AC 240 V, 50 Hz
Power consumption:	Approx. 34 W
Operating temperature:	5°C to 40°C
Storage temperature:	– 20°C to – 55°C
Weight:	6.5 kg
Dimensions:	430 mm (W) × 348 mm (D) × 89 mm (H)
Video Input:	0.5 – 2.0 Vp-p, 75 ohm
Output:	1.0 Vp-p, 75 ohm
Audio Input:	0 dB = 0.775 Vrms Line: – 5 dB, more than 47 k ohm. Correspond to 54% mod. (RCA)
Output:	Line: – 5 dB, less than 1 k ohm. Correspond to 54% mod. (RCA)
Accessories included:	Antenna 75 ohm coaxial connector cable (plug provided) Operation Manual Infrared Remote control Audio cable

As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice.

Note: The antenna must correspond to the new standard DIN 45325 (IEC 169-2) for combined VHF/UHF antenna with 75 ohm connector.

BEFORE RETURNING THE VIDEO CASSETTE RECORDER

In addition to the checks necessary as a result of a repair having been carried out, the following additional safety checks should also be made before returning the unit to the user.

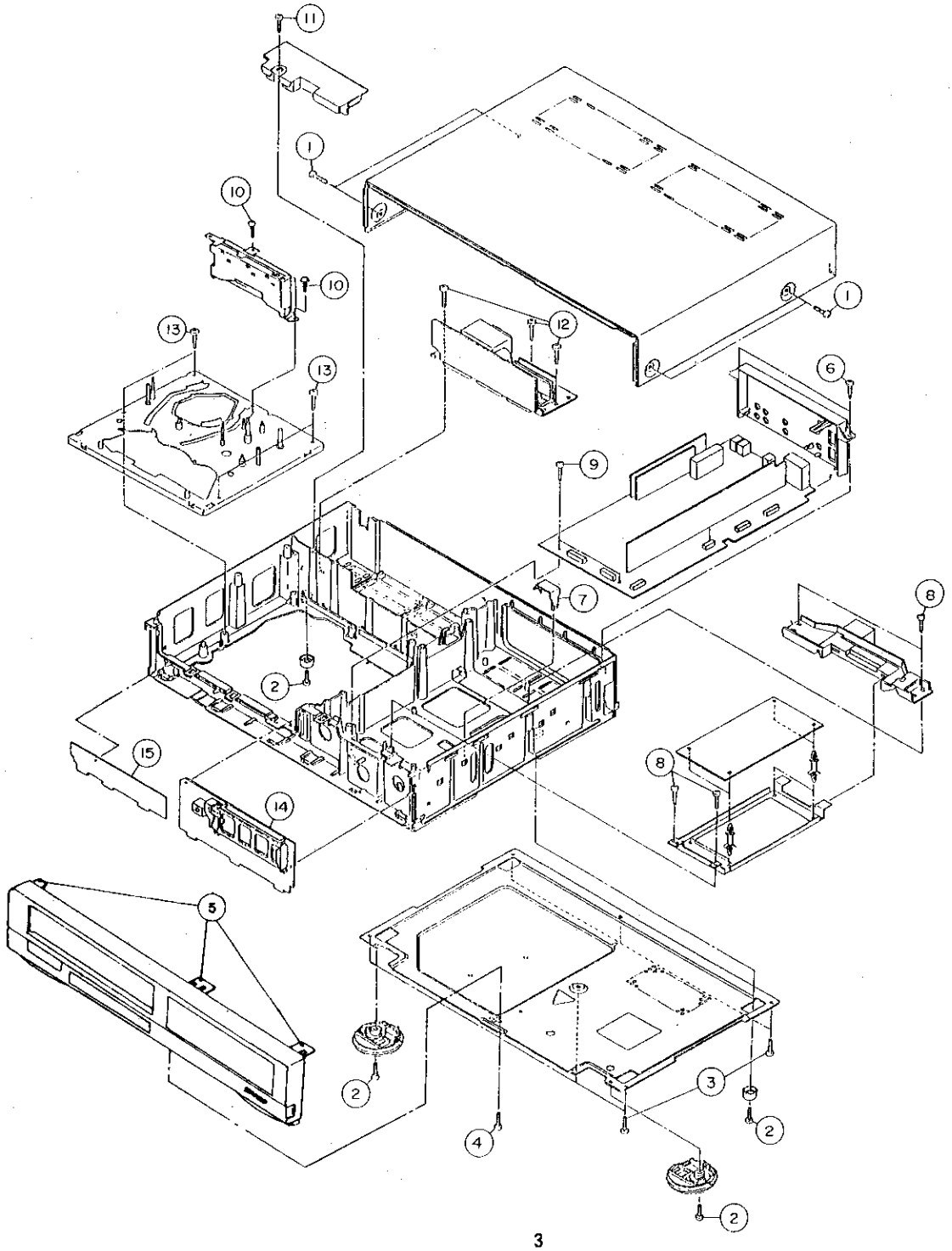
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the Video cassette recorder.

2. Inspect all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators etc.

3. Apply test voltage of 3000 volts between live parts and accessible metal parts for 3 seconds.

DISASSEMBLY AND REASSEMBLY

1. Remove the four upper cabinet fastening screws ①.
2. Remove the four decorative foot fastening screws ②.
3. Remove the six bottom panal fastening screws ③.
4. Remove the one front panel fastening screw ④.
5. Release the three clips ⑤ and remove the front panel.
6. Remove the two antenna terminal cover fastening screws ⑥.
7. Remove the Y/C PWB holder ⑦.
8. Remove the four mounting screws ⑧ from the PWB holder.
9. Remove the two main PWB fastening screws ⑨.
10. Remove the two head amp PWB fastening screws ⑩.
11. Remove the one PWB holder fastening screw ⑪.
12. Remove the three power unit fastening screws ⑫.
13. Remove the four machanism chassis fastening screws ⑬.
14. Release the timer PWB fastening clips ⑭.
15. Release the operation PWB fastening clips ⑮.



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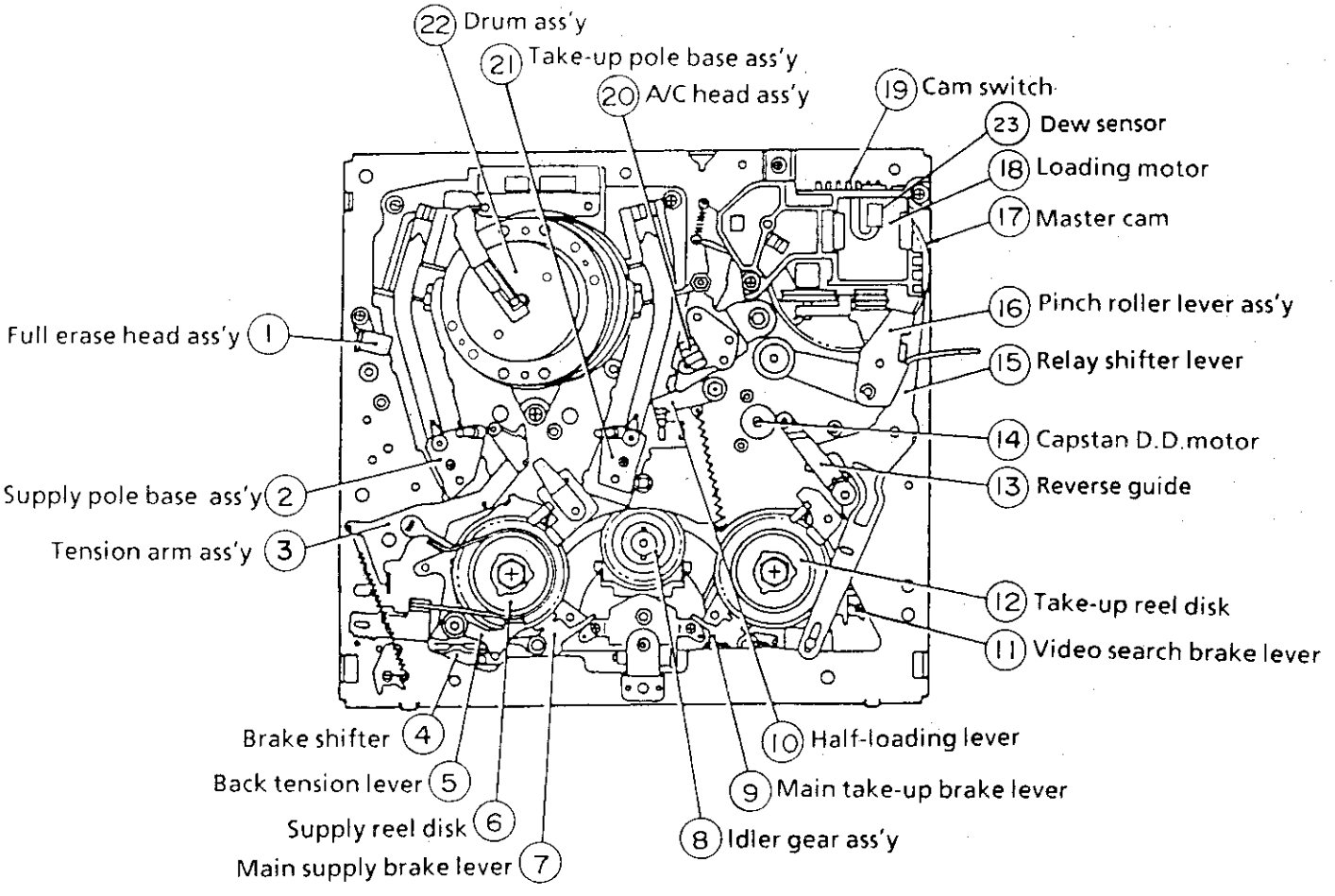
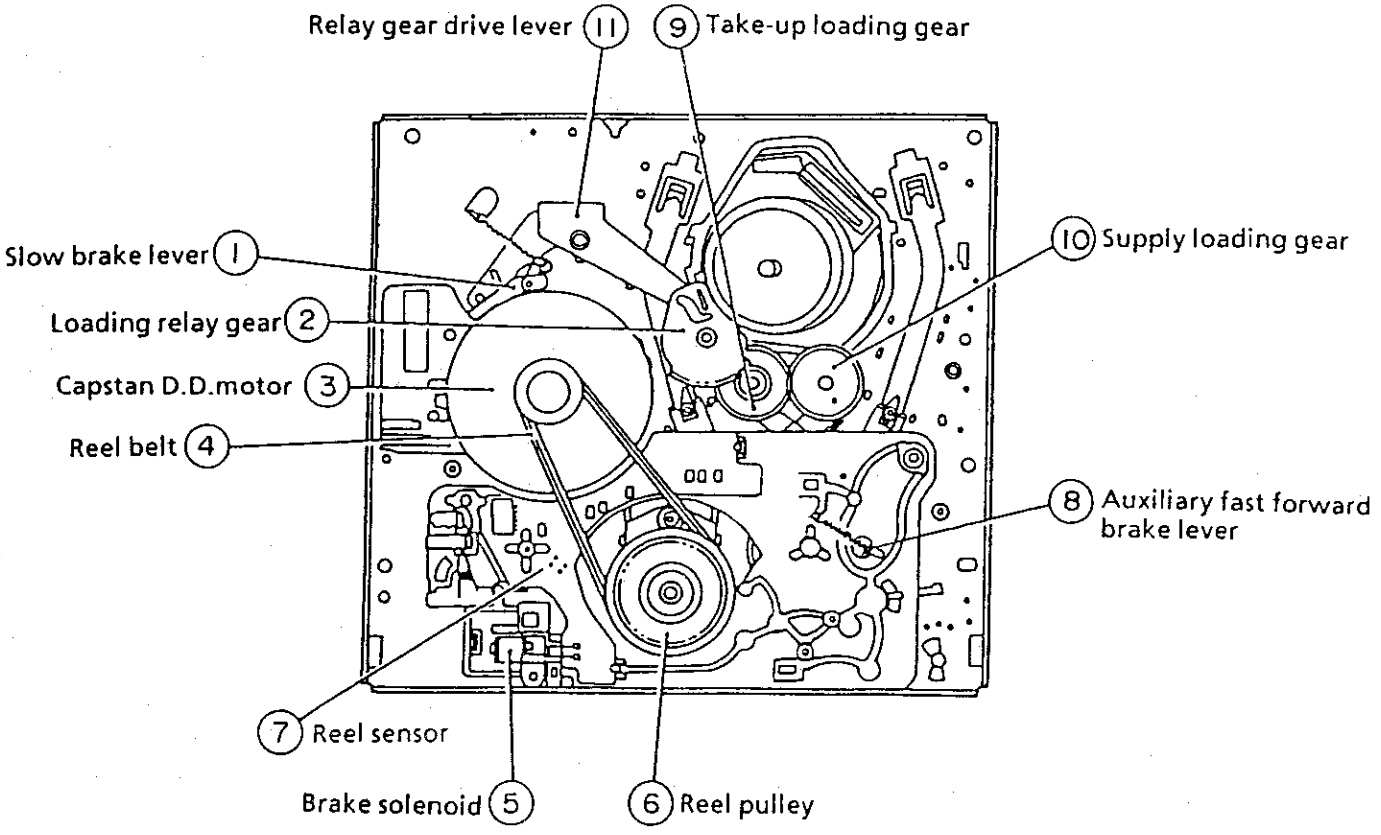
FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)



No.	Function	No.	Function
1.	Full erase head ass'y Erase the whole records on the tape in the recording mode.	13	Reverse guide Pulls out the tape in the video search rewind mode, and controls the tape drive train height with the upper and lower guides.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	15.	Relay shifter lever Transmits the operation of the master cam to the brake shifter, and operates the reverse guide.
4.	Brake shifter Set the position of brake or the like in accordance with the modes such as stop and playback. Back tension lever	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running. The right protrusion switches the clutch of the cassette housing 'control assembly in "tape eject", and makes the mechanism eject the tape.
5.	Back tension lever Bakes the supply reel disk to a certain degree to prevent tape slackening during "loading" and "shifting from playback to video search rewind".	17.	Master cam Turns clockwise during loading, and couterclockwise during unloading, and moves the shifter or the like in accordance with each mode.
7.	Main supply brake Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cassette housing control assembly via the belt.
9	Main take-up brake Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	19.	Cam switch Rotates synchronously with the master cam, and detects the position of each mode by means of the internal switch
10.	Half-loading lever Bring the tape in contact with the A/C head, putting it in half-loading state in the fast forward or rewind mode.	23.	Dew sensor Detects the generation of dew in the set. It stops the mechanical action of the set when finding any dew in the set.
11.	Video search brake lever It is in contact with the take-up reel disk normally, and brakes it to a certain degree. It applies larger brake in the video search rewind mode.		

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



No.	Function	No.	Function
1.	Slow brake Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	7.	Reel sensor An element which sheds the light onto the reflection plate affixed to the bottom side of the reel disk, and detects the rotation of the reel disk through receiving the reflected light.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the reel belt.	8.	Auxiliary fast forward brake lever Brakes the supply reel disk to a certain degree in the fast forward and rewind modes.
4.	Reel belt Transmits the power to run the tape to the reel pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading relay gear, and applies the tape around the drum assembly, as well as transmits the power to the supply loading gear.
5.	Brake solenoid Adsorbs and holds the brake shifter in the fast forward and rewind modes, and releases it in the stop mode.	10.	Supply loading gear Shifts the supply pole base and guide roller via the take-up loading gear, and applies the tape around the drum assembly.
6.	Reel pulley Transmits the power of the capstan D.D. motor to the reel disk via the reel idler.	11.	Relay gear drive lever Transmits the movement of the master cam to the take-up loading gear via the loading relay gear.

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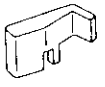
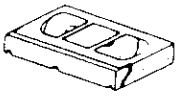
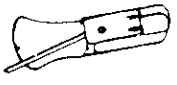
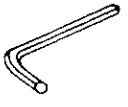
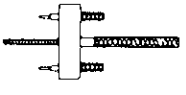
ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

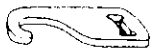
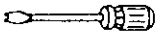
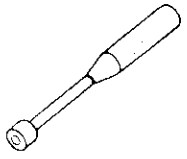
Here we will describe a relatively simple service work in the field, not referring to the more complicated repairs which would require the use of special equipment and tools (drum assembly replacement, for example).

We are sure that the easy-to-handle tools listed below would be more than handy for periodical maintenance to keep the machine in its original working condition.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are required for proper service and satisfactory repair.

No.	Jig Item	Part No.	Price Code	Configuration	Remarks
1	Reel Disk Height Adjustment Jig	JiGRH0002	BR		These jigs are used for checking and adjusting the reel disk height
2	Master Plane	JiGMP0001	BY		
3	A/C Head Tilt Adjustment Jig	JiGACH-F18	BU		This Jig is used for setting the A/C head tilt.
4	Torque Gauge (90g)	JiGTG0090	CM		These jigs are used for checking and adjusting the torque of take-up and supply reel disks.
	Torque Gauge (1.2 kg)	JiGTG1200	CN		
5	Gauge Head	JiGTH0006	AW		
6	Cassette Torque Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up tape back tension.
7	Tension Gauge (300g)	JiGSG0300	BF		There are two Gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0kg)	JiGSG2000	BS		
	Hex Wrench (0.9mm)	JiGHW0009	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.2mm)	JiGHW0012	AE		
	Hex Wrench (1.5mm)	JiGHW0015	AE		
	Alignment Tape	VROCPSV	CD		These Tapes are especially used for electrical fine adjustment.
	HiFi Alignment Tape	VROCBFFS	CB		
	um Replacing Jig	JiGDT-0001	BG		This is used for replacement of the VCR's upper drum.

No.	Jig Item	Part No.	Price Code	Configuration	Remarks
11	Tension Gauge Adapter	JiGADP003	BK		This Jig is used with the tension gauge. Rotary Transformer Clearance Adjusting Jig.
12	Special Bladed Screwdriver	JiGDRiVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
13	Tension Band and Plate Adjustment Jig	JiGDRiVER-6	BM		This Jig is used for adjusting the tension band and tension plate.
14	Torque Driver (5kg)	JiGTD1200	CB		This is used to screw down resin-made parts: the specified torque is 5 kg.
15	Box Driver	JiGDRiVER110-7	AS		This Jig is used for height adjustment of the A/C head and X-Position.
		JiGDRiVER110-4	AV		This Jig is used for height adjustment of the retaining guide.
16	Retaining Guide Height Adjustment Jig	JiGGH-F18	BU		This Jig is used for height adjustment of the retaining guide.
17	Reverse Guide Height Adjustment Jig	JiGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

NOTE:
Current JiGMA0001 contains Master Plane (JiGMP0001) and Disk Height Adjusting Jig (JiGRH0001).
Even though new Disk Height Adjusting Jig (JiGRH0002) covers greater height, this new Jig (JiGRH0002) can be used for current JiGRH0001, but current Jig (JiGRH0001) cannot be used as JiGRH0002.
Master Plane (JiGMP0001) can be used with JiGRH0001 and JiGRH0002 as well.

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts \ Maintained	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	□	□	□	□	□	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller	□	□	□	□	□		
Supply impedance roller (inner)		□		□	□		Clean with pure high quality isopropyl alcohol.
Supply impedance roller flange	□	□	□	□	□		Clean tape contact area with the specified cleaning liquid.
Retaining guide	□	□	□	□	□		
Slant pole	□	□	□	□	□		
Video head	□	○□	□	○□	○□	Poor S/N ratio, no color	Clean tape contact area with the specified cleaning liquid.
Full-erase head	□	□	□	□	□	Poor color, beating	
A/C head	□	□	□	□	□	Sound too small or distorted	
Capstan D.D. Motor	□	□	□	□	○	No tape running, uneven color	
Pinch roller	□	□	□	□	○	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		□		○	□	No tape running, tape slack, no fast forward/rewind motion	
Loading belt/Cassette loading belt		□		○	□	Cassette not loaded or unloaded	
Tension band ass'y					○	Lateral image swing	
Loading motor					○	Cassette not loaded or unloaded	
Reel block*						See the chart below	

*See the table below for servicing the reel block parts.

pply/Take-up reel disks		□△		△○	□△	No tape running, tape slack	Clean with pure high quality isopropyl alcohol.
in supply/take-up brake ers				○		Tape slack	
o search brake lever				○			
gear ass'y				○		No tape running	
lley		□△		□○	□△		

○: Part replacement.
□: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
△: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

odel has no adjusting parts for torques, tensions, etc. If the reading is outside the specified range, or replace the part.

REMOVAL AND REASSEMBLY OF CASSETTE HOUSING CONTROL ASSEMBLY

- Removal

1. Set the cassette ejected condition in the cassette eject mode.
2. Unplug the recorder from the main source.
3. Follow the procedures below in the specified order.
   a) Remove the cassette loading belt ①.
   b) Disconnect the FFC (Full Flat Cable) ②.
   c) Remove the cassette housing installation screws ③.
   d) Slide and pull out the cassette housing control assembly ④ upward .

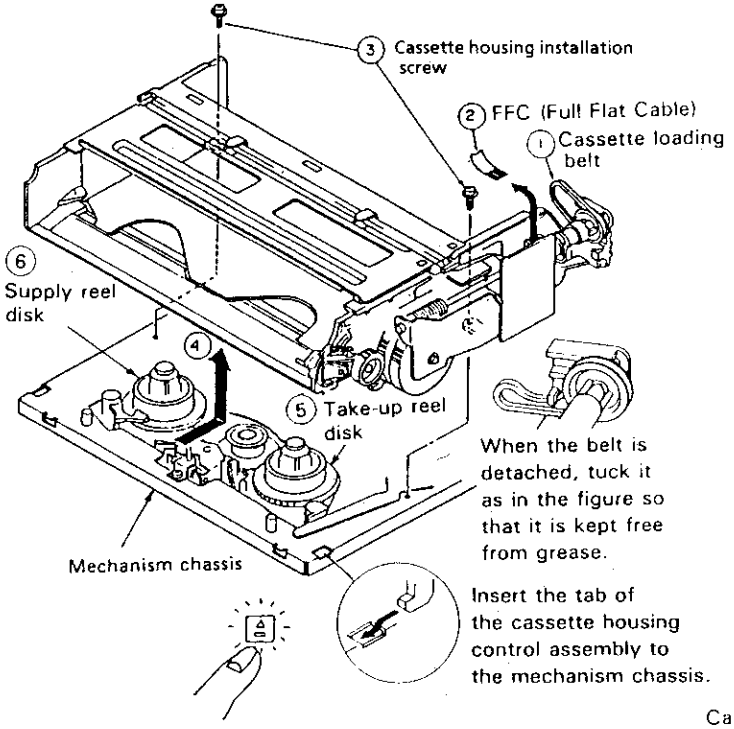

③ Cassette housing installation screw
② FFC (Full Flat Cable)
① Cassette loading belt
⑥ Supply reel disk
④
⑤ Take-up reel disk
When the belt is detached, tuck it as in the figure so that it is kept free from grease.
Mechanism chassis
Insert the tab of the cassette housing control assembly to the mechanism chassis.

Figure 1-1.

- Reassembly

1. Before installation of the cassette housing control assembly, place the unit in the stop mode with the power on, then unplug the power cord. (The main body is placed in the eject mode.)
2. Follow the procedures for removal in the reverse order.

Notes:

1. Be sure to unplug the power cord in removal and reassembly.
2. Keep the cassette loading belt free from grease. In case of its adhesion, clean the belt.
3. In using a magnet screw driver, be sure to keep it away from the A/C head, FE (Full Erase) head, or the drum.
4. In removal and reassembly, take care not to hit the cassette housing control assembly or tools against the guide pin, drum, or the like thereabout.
5. Place the unit in the eject mode in removal or reassembly of the cassette housing control assembly.
6. Load the cassette once onto the cassette housing control assembly after reassembly. (If the cassette housing control assembly normally operates after this, the phases of mechanism and the cassette controller are accurately adjusted after ejection.)

MECHANICAL OPERATION CHECK WITHOUT CASSETTE

When power is on, the general operations of the mechanism can be checked without a cassette. Note the following points.

1. Check video search rewind and rewind, rotating the take-up reel disk ⑤ by hand (in either normal or reverse direction). If it is not rotated, the reel sensor works to shift the mechanism to the eject mode.
2. When the stop button is pressed, the mechanism does not stop at a normal stop position. It shifts to the eject mode and stops.
3. When the stop button is pressed in the playback, video search rewind, and video search forward modes, the supply reel disk ⑥ keeps on rotating for several seconds for elimination of tape slack in the course of shifting to the eject mode. In such a case, rotate the take-up reel disk ⑤ somewhat by hand, and the supply reel disk ⑥ stops, which can reduce the working time.

REPLACEMENT OF WORM WHEEL ASSEMBLY

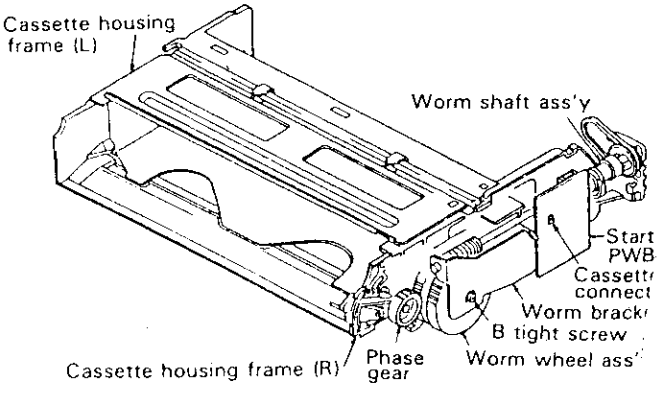


Figure 1-2.

- **Removal**

1. Unsolder the cassette switch connectors from the start sensor PWB.

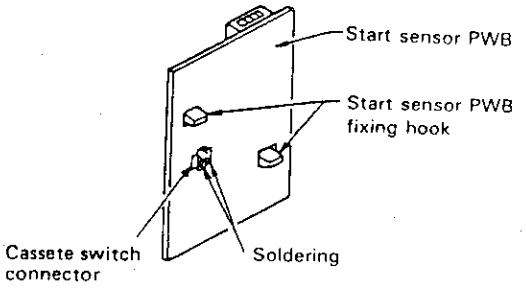


Figure 1-3.

2. Lift the start sensor PWB pressing the two start sensor PWB fixing hooks inward.

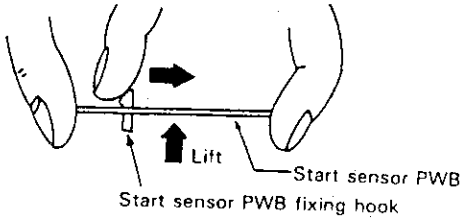


Figure 1-4.

3. Unscrew one B tight screw to detach the worm bracket.

   Note: The worm shaft bearing can easily come out of position. So be careful not to lose it.

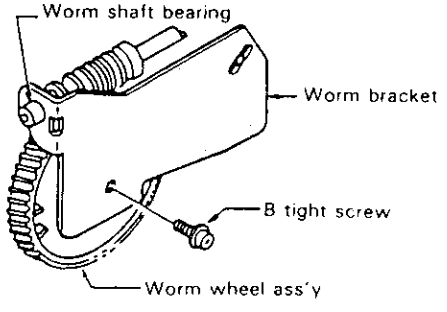


Figure 1-5.

emove the worm shaft assembly, pulley, and ıssette loading belt all from the cassette ıusing frame (R).

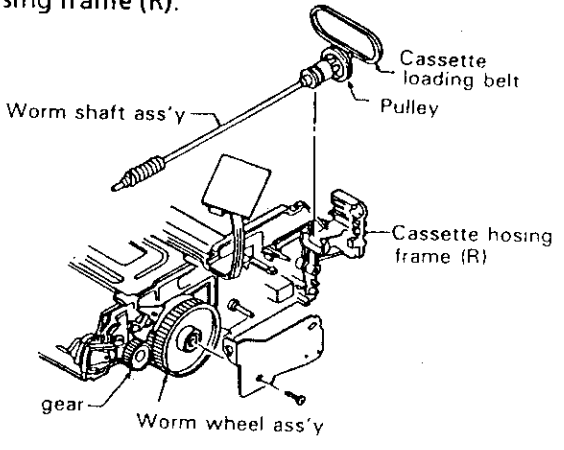


Figure 1-6.

5. Place the slider pin just above the worm wheel assembly (Figure 1-7). (The retainer of the slider is locked at two positions hen. So unlock it as in the Figure 1-8.)
6. Pull out the worm wheel assembly toward you pressing the switch lever upward. (Figure 1-7)

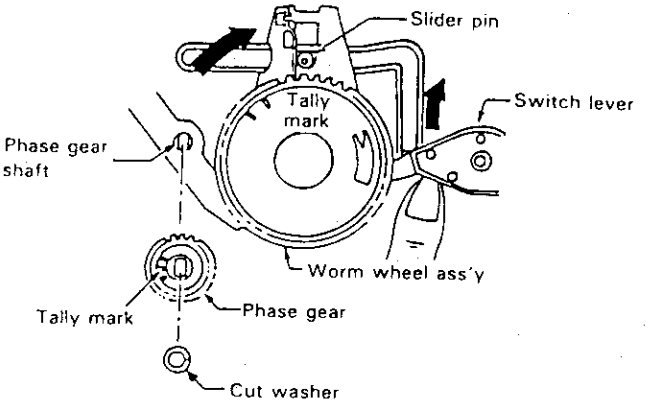


Figure 1-7.

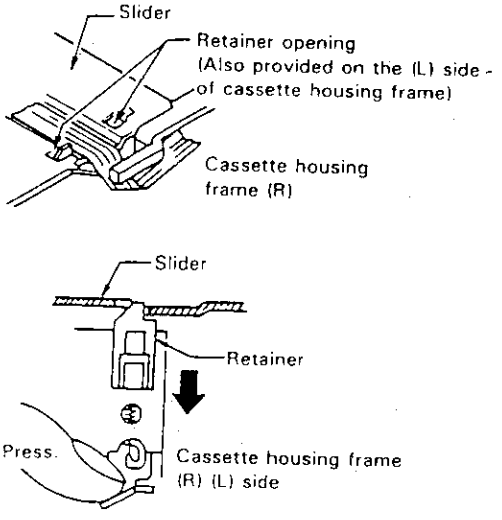


Figure 1-8.

- **Reassembly**

1. Turn the phase gear clockwise until the slider comes to a halt in the cassette insertion direction. (See the Figure 1-9.)
2. Insert the set up worm wheel gear assembly into the cassette housing frame (R), matching the mark on the phase gear with the mark on the worm wheel gear. Detach the cut washer on the phase gear assembly and the phase gear for easier installation of worm wheel assembly.

   Note: Make sure that the slider pin is in the groove of the drive gear arm.

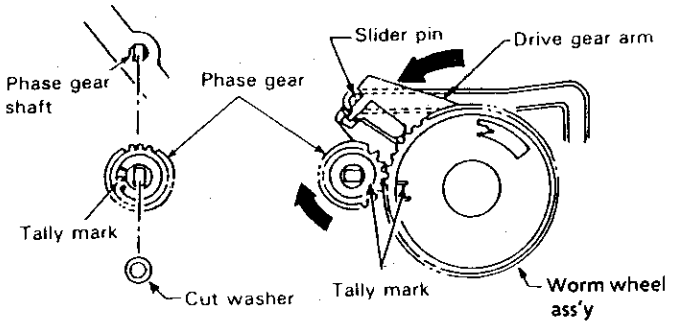


Figure 1-9.

3. Install the pulley and the cassette loading belt on the worm shaft assembly. Couple the clutch to the clutch lever. And mount them together in the cassette housing frame (R).
   Note: Keep in mind that the clutch switching lever should be in the correct position. The mechanism might malfunction if the lever is slightly out of position. (See page 12.)

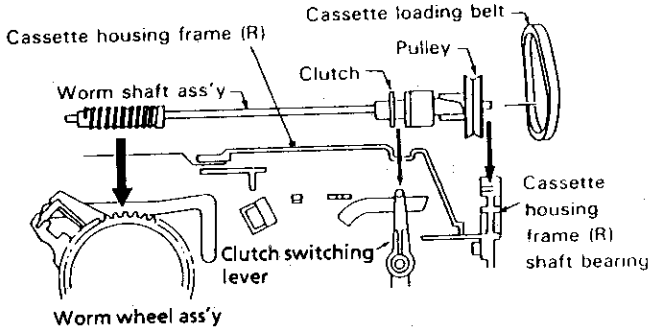


Figure 1-10.

4. Attach the worm bracket to the worm shaft assembly. Place them onto the boss on the cassette housing frame (R).
   Note: Insert ① before screwing into ② and ③.

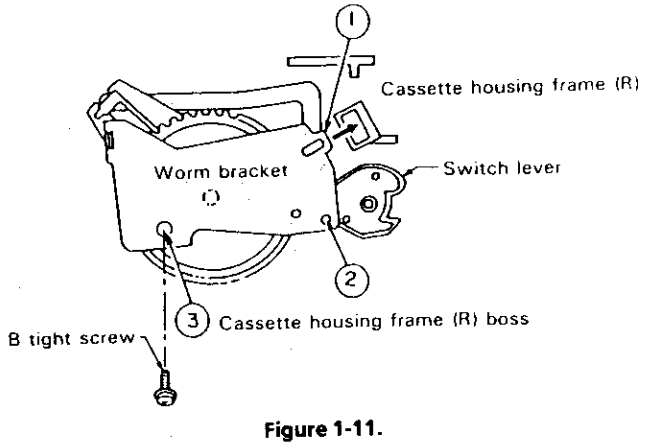
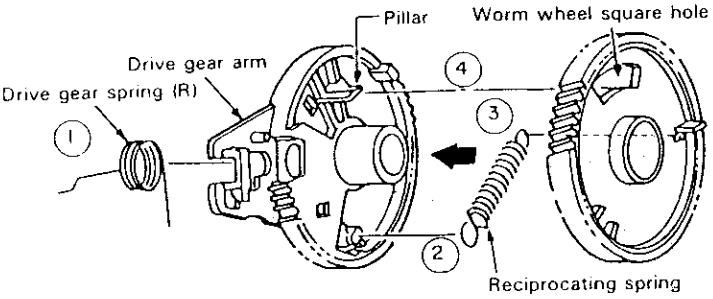


Figure 1-11.

5. Tighten one B tight screw.
   Note: Do not overtighten the B tight screw (no more than 5.0 ± 0.5 kg.cm), because the lower threads of the screw hole at the resin-mode boss can be broken.
6. Place the start sensor PWB on the cassette housing frame (R).
   Note: Check that the switch connectors are in the cassette switch mounting hole.

7. Finally resolder the cassette switch connector to the start sensor PWB.

REASSEMBLY OF DRIVE GEAR



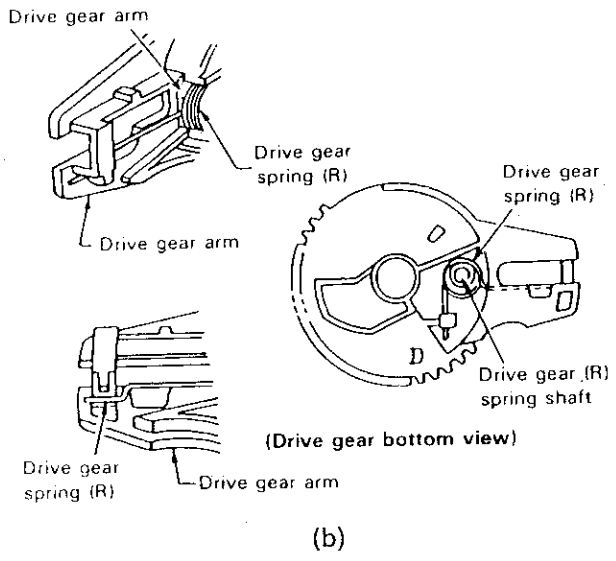


Figure 1-12.

1. Pass the tip of the drive gear spring (R through the square hole of the drive gear (hook the spring in position.
2. Hook one end ② of the reciprocating spri the catch of the drive gear (R).
3. Hook the other end ③ of the recipro spring to the catch of the worm wheel.
4. Insert the pillar ④ of the drive gear (R) i square hole of the worm wheel. Turn t wheel somewhat counterclockwise for of the worm wheel to the drive gear (R) the reciprocating spring is at work.

MC-Service

REPLACEMENT OF CASSETTE LOADING BELT

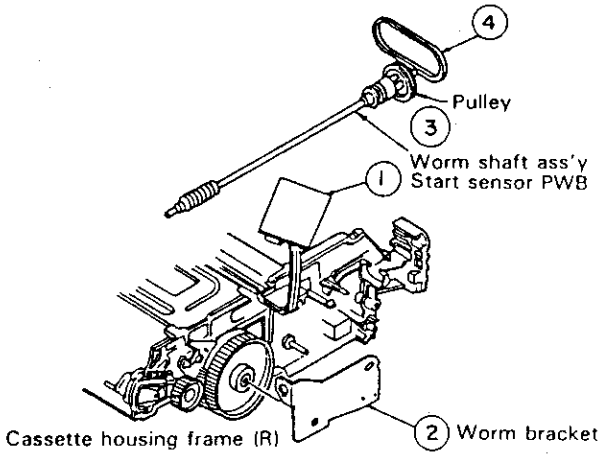


Figure 1-13.

1. Remove the start sensor PWB ① and worm bracket ② from the cassette housing frame (R).
2. Remove the worm shaft assembly ③.
3. Replace the cassette loading belt ④ with a new one.

Notes:

1. Do not overtighten the B tight screw which holds the worm bracket in position. The specified torque is 5.0 ± 0.5 kg.cm.
2. Make sure that the cassette loading belt is free from grease. If stained with grease, clean the belt with the cleaning liquid.
3. Perform checking of the clutch switch lever for proper action.

CHECKING THE CLUTCH SWITCH LEVER

Checking

ace the mechanism in the cassette eject mode
ıen removing and attaching the cassette housing
m and to the mechanism chassis.
ke sure enough that each part in the cassette
ısing such as the clutch switch lever is in
ition. If not, it causes malfunction.
e:
re 1-14 shows the position of each part in the
tte eject mode.

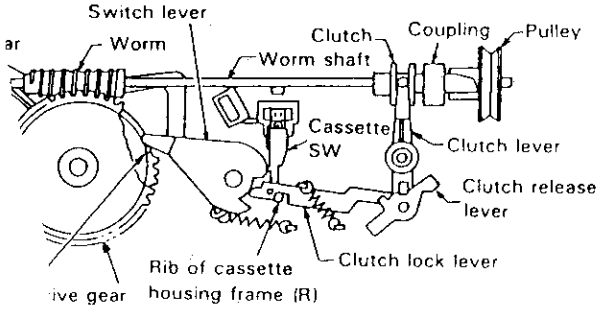


Figure 1-14.

1. First make sure that the tip of the switch lever is held at the rib of the drive gear (R).
2. Check that the rib of cassette housing frame (R) and the concavity of the clutch lock lever are engaged.
3. Finally be sure that the relationship between the clutch lever and the clutch, as well as between the clutch and the pulley, are correct as in the Figure 1-15.

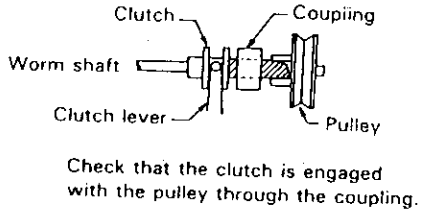


Figure 1-15.

- Resetting

Take the following steps to reset the clutch if it is unlocked or if the switch lever and the clutch lock lever are unlocked.

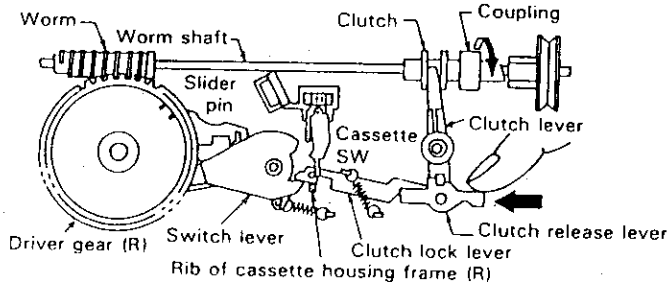


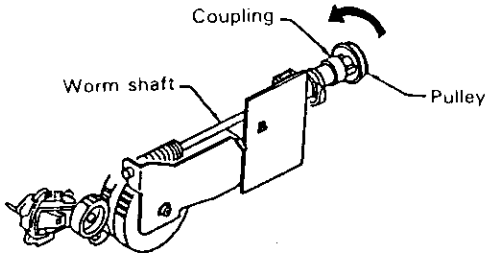
Figure 1-16.

1. Shift the slider by turning the coupling in the arrow direction (clockwise) until the slider pin is at the bottom of the slider groove as shown in the Figure 1-16. (The loading mode)
   Note: Note that the slider is equipped with a lock meachanism. Unlock the locks on cassette housing frames (L) and (R) side before shifting the slider.
2. When the position is set as shown in the Figure 1-16, push the clutch release lever in the direction of the arrow by hand until the clutch lock lever becomes tightly locked by the rib of cassette housing frame (R).
3. Then turn the coupling counterclockwise until the slider reaches the cassette insertion opening and the reciprocating spring is activated.
   Note: There is no need to unlock the slider when shifting the slider to the cassette insertion opening. Just keep shifting the slider.

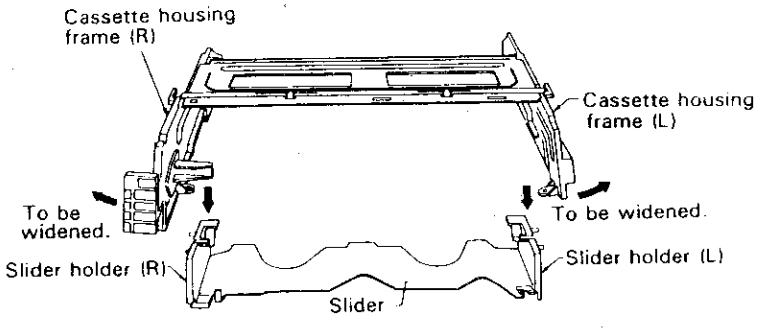
REPLACEMENT OF LOCK RELEASE LEVER ASS'Y

- Removal

1. Place the slider in the cassette down position. (Turn the coupling on the worm shaft clockwise until the slider is in the cassette down position.)
   Note: Before shifting, unlock the slider.
2. Slightly widen the cassette housing frames (R) and (L) to unhook the slider holders (R) and (L) of the slider assembly off the grooves of the cassette housing frames.



(a)



(b)

Figure 1-17.

3. Lift the slider holder (R) upward about 2mm off the slider by pressing two catches with a thin tip screw driver. Take care not to damage the catches.

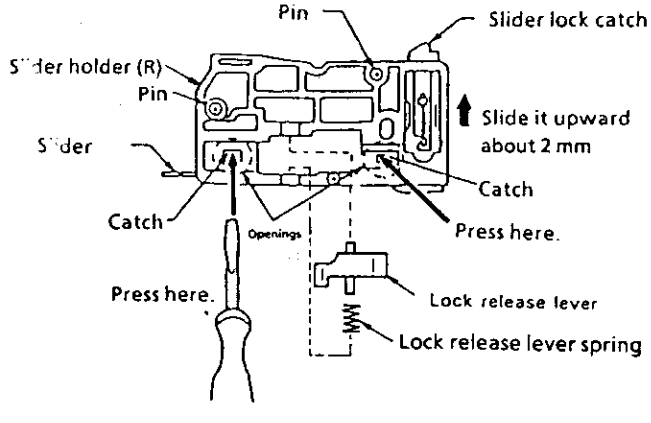


Figure 1-18.

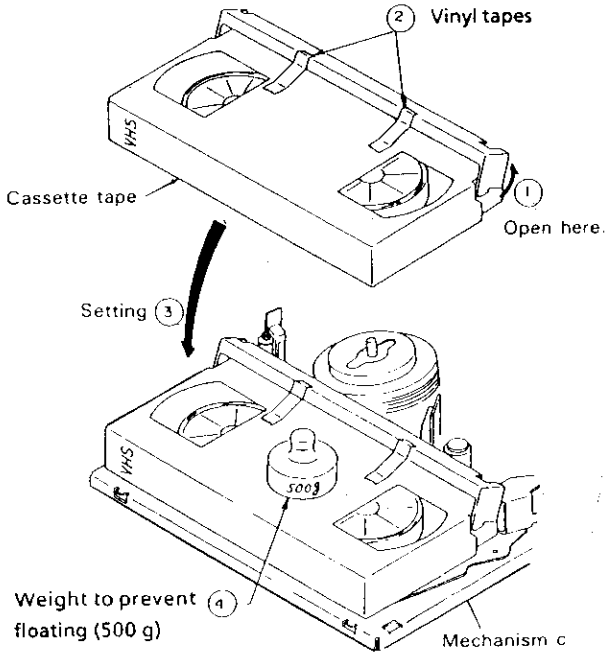
4. Remove the lock release lever from the slider holder (R)

- Reassembly

1. Follow the steps for removal in the reverse order. (See Figures 1-17 and 1-18.)
2. Attach the lock release lever to the slider holder (R).
3. Slide the slider holder (R) downward so that the two catches of the slider holder (R) fit the openings of the slider.
4. Slightly widen the cassette housing frames, and set the pins of slider holders (R) and (L) into the grooves of the cassette housing frames.
   Note: Check if the pins of the slider holders (R) and (L) fit the grooves of the cassette housing frames, and if the drive gear arm is sufficiently engaged with the slider holders.
5. Turn the coupling counterclockwise until the slider is at the cassette insertion opening.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Plug in the power cord.
2. Turn on the power switch.
3. Open the lid ① of a cassette tape by hand.
4. Hold the lid with pieces of vinyl tape ②.
5. Set the cassette tape in the mechanism chassis.
6. Weight the cassette tape with a weight ④ to prevent floating.
7. Perform ② running test.



Note: The weight should not be more than

Figure 1-19.

REPLACEMENT AND HEIGHT CHECKING AND ADJUSTMENT OF REEL DISKS

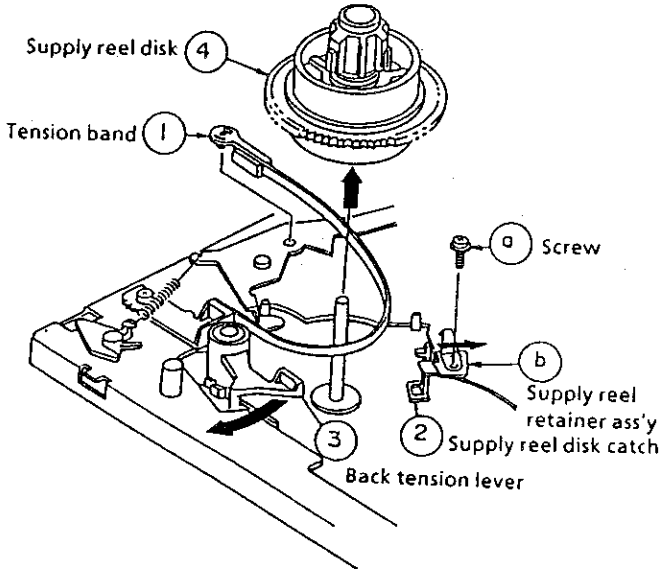
1. Remove the cassette housing control assembly.
2. Set the mechanism in the playback mode with no cassette tape in place. Unplug the power cord.
3. Set the idler gear in the center (neutral).

- Removal (Supply reel disk)

1. Remove the tension band ①. (Take care not to deform it.)
2. Unscrew the screw ⓐ and remove the supply reel retainer assembly ⓑ.
3. Release the supply reel disk catch and back tension lever ③.
4. Pull the supply reel disk ④ upward.

Notes :

1. Take care not to deform the tension band.
2. Check and adjust the tension pole position. (See page 19.)
3. Be careful not to damage the gear and the idler gear on the supply reel disk.
4. Press the tension band in the direction of the arrow for removal.(See figure 1-20 (b).)



(a)

(b)

Figure 1-20.

- Removal (Take-up reel disk)

1. Unscrew the screw ⓒ and remove the take-up reel retainer.
2. Release the take-up reel disk catch ①.
3. Pull the take-up reel disk ② upward.

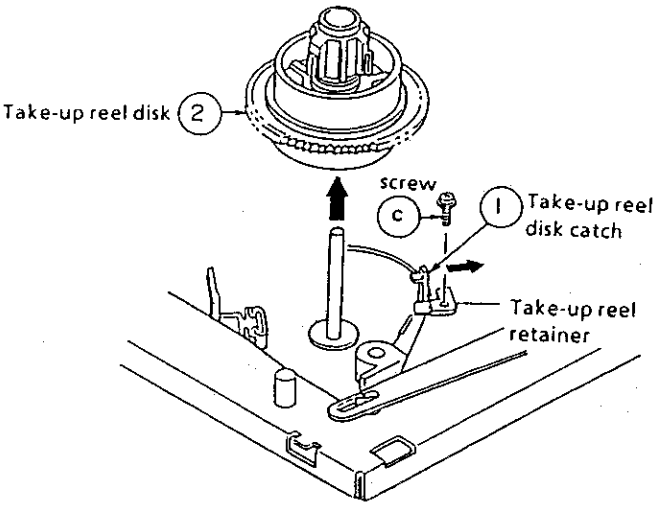


Figure 1-21.

- Reassembly (Supply reel disk)

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the supply reel disk catch ② and back tension lever ③.
3. Install a new supply reel disk ④ onto the shaft.
4. Replace the tension band ⑤ around the supply reel disk, and insert it to the hole of the tension arm.
5. Replace the supply reel retainer assembly ⓑ in place, and tighten up the screw ⓐ.

Notes :

1. Take enough care not to deform the tension band during installation of the supply reel disk.
2. Be careful not to damage the supply reel disk gear, back tension lever, supply reel disk catch, or the like with tools.

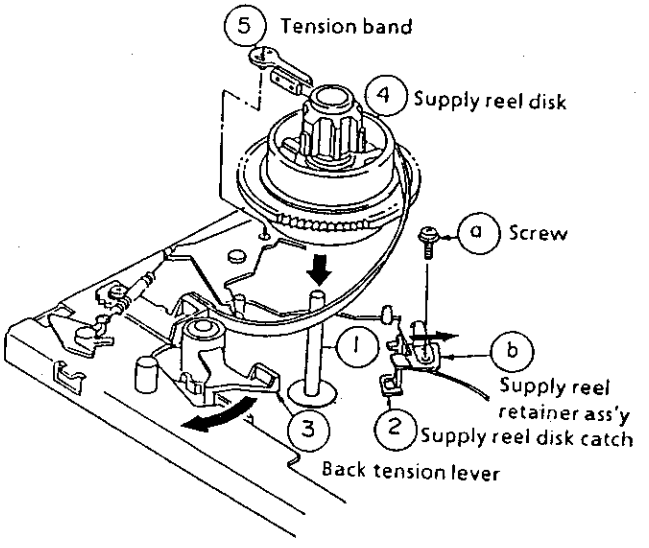


Figure 1-22.

- Reassembly (Take-up reel disk)

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the take-up reel disk catch ② and video search brake lever ③.
3. Install a new take-up reel disk ④ onto the shaft.
4. Replace the take-up reel retainer ⑤ in position and tighten up the screw ⓒ.

Note :
Take care not to damage the video search brake lever.

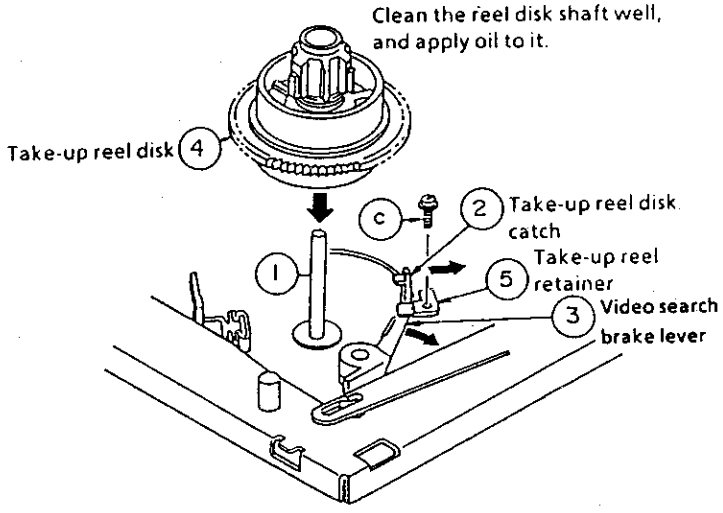

Clean the reel disk shaft well, and apply oil to it.
Take-up reel disk
4
c
2
Take-up reel disk catch
1
5
Take-up reel retainer
3
Video search brake lever
Apply a thin tip driver to the arrow position in releasing for easier setting of the take-up reel disk.

Figure 1-23.

* After reassembly, check the video search rewind back tension (See page 18), and check the brake torque (See page 20).

- Height checking and adjustment

Note:
Place the master plane onto the mechanism unit, taking care not to hit the drum (see Figure 1-24)

1. For height adjustment, press the reel disk with a finger, and turn it right and left with a screwdriver (see Figure 1-26 (a)).

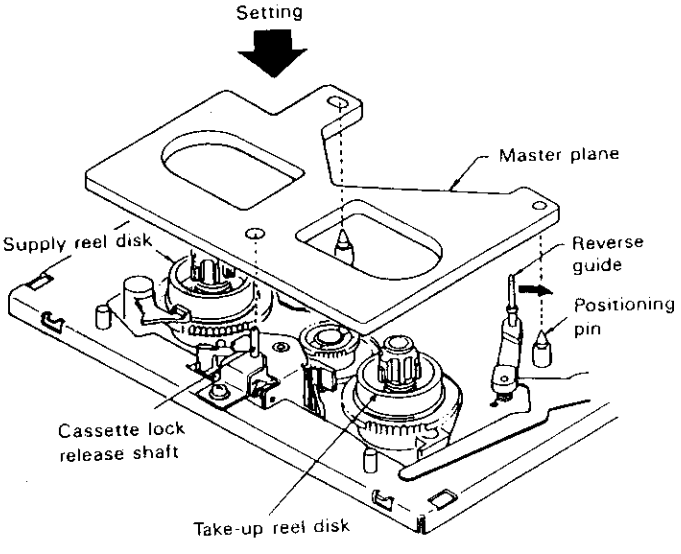


Figure 1-24.

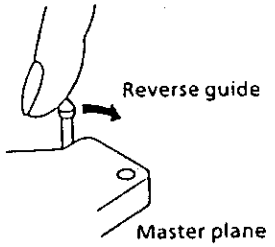
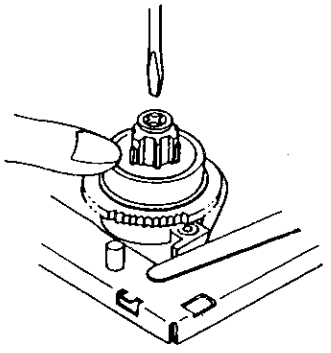


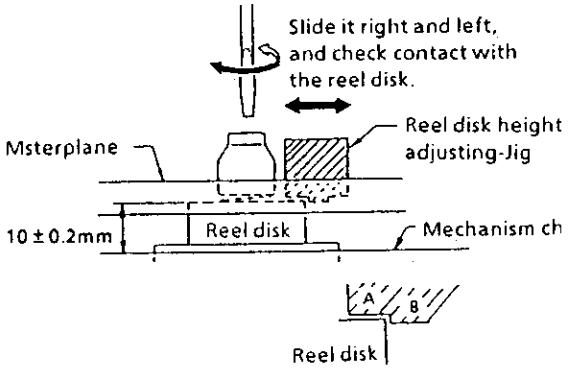
Figure 1-25.

2. Check that the reel disk is lower than part A but higher than part B. If the height is not correct, adjust the height adjusting screw (see Figure 1-26 (b)).

Note :
Whenever replacing the reel disk, perform the height checking and adjustment.



(a)



(b)

Figure 1-26.

MC-Service

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- Remove the cassette housing control assembly.
- **Setting**

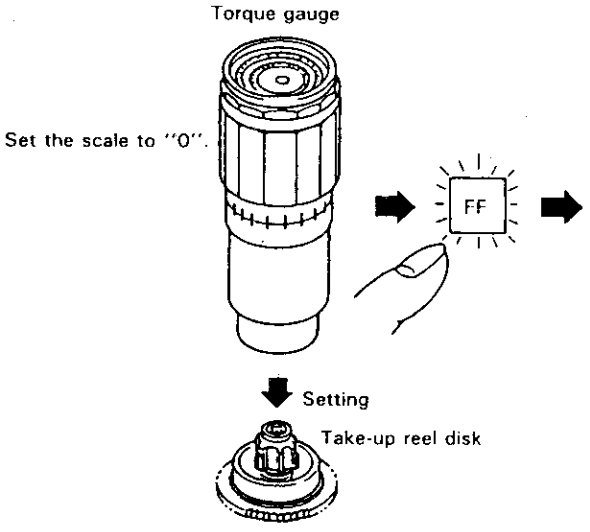


Figure 1-27.

- **Checking**

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction

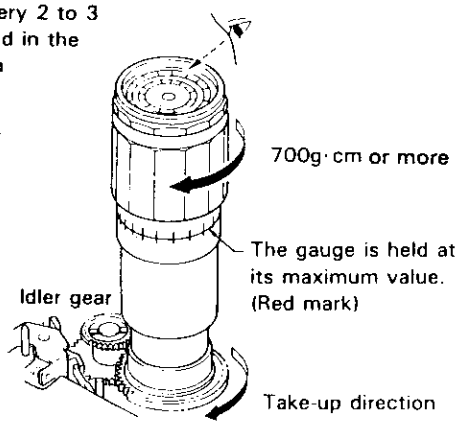


Figure 1-28.

djustment
the take-up torque is outside the range, clean
e capstan D.D. motor pulley, reel belt and reel
ley with cleaning liquid, then recheck the
que.
e take-up torque is still out of range, replace
eel belt.

down the torque gauge so that it may not
f.
n checking the take-up torque, do not keep
eel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- Remove the cassette housing control assembly.
- **Setting**

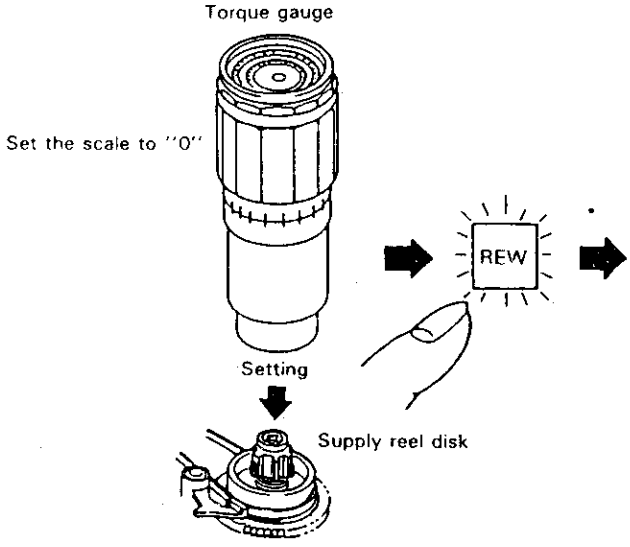


Figure 1-29.

- **Checking**

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by band in the take-up direction

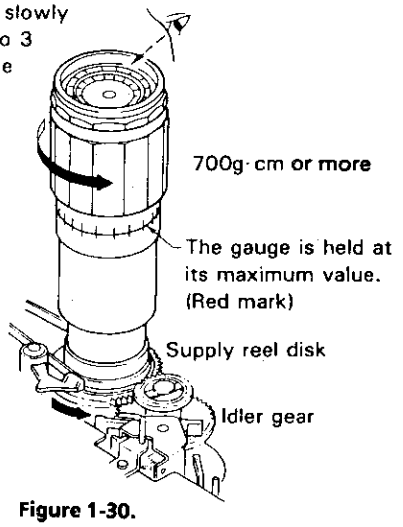


Figure 1-30.

- Adjustment

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes :

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN PLAYBACK MODE

1. Remove the cassette housing control assembly.
2. Open the lid of the cassette torque meter, and hold it with pieces of vinyl tapes.

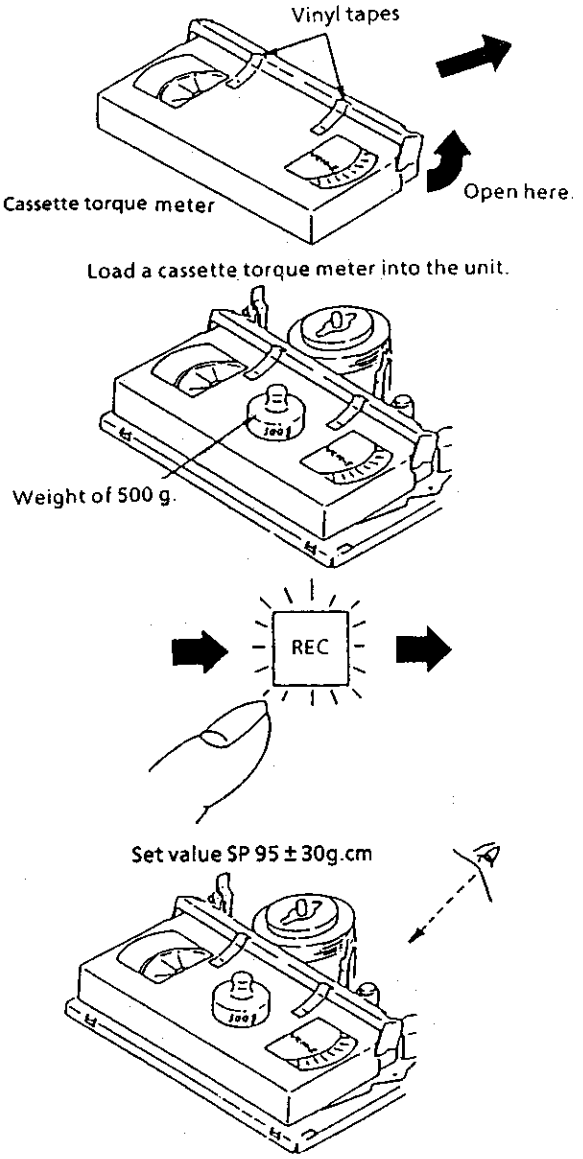


Figure 1-31.

- Checking

1. Check that the torque is in the range of 95 ± 30 g.cm.
2. The torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuation as the value.
3. Place the unit in the SP record mode, and check that the take-up torque is within the range.

- Adjustment

If the take-up torque in the playback mode is outside the range, replace the take-up reel disk.

Note : Weight the cassette torque meter to prevent floating.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- Remove the cassette housing control assembly.
- Checking

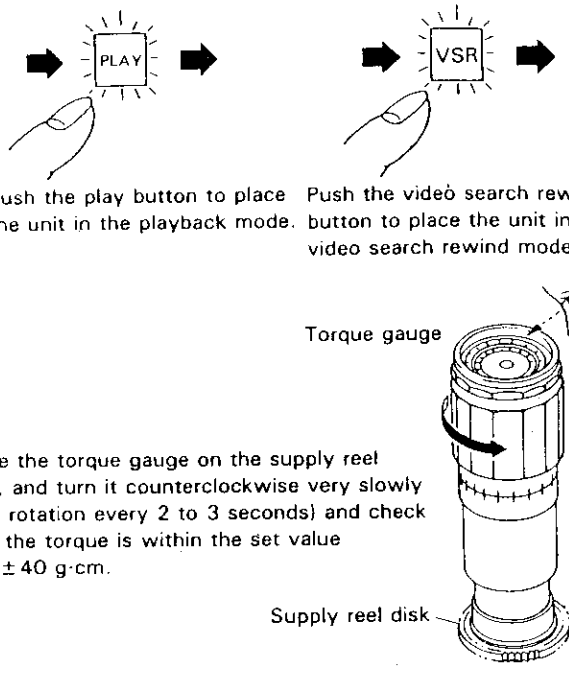

PLAY
VSR
Push the play button to place the unit in the playback mode.
Push the video search rewind button to place the unit in the video search rewind mode.
Torque gauge
Place the torque gauge on the supply reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 170 ± 40 g·cm.
Supply reel disk

Figure 1-32.

Note :
Set the torque gauge securely on the supply reel disk. If it is not secure, the measurement will be incorrect.

- Adjustment

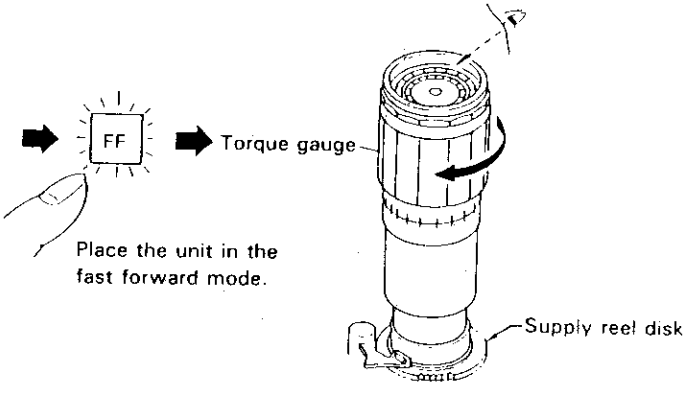
If the take-up torque in video search rewind mode is outside the range, replace the supply reel disk.

Note:
The torque fluctuates due to the rotational deviation of the supply reel disk. Use the center of the fluctuati at the value.

MC-Service

CHECKING THE FAST FORWARD BACK TENSION

- Remove the cassette housing control assembly.
- Checking



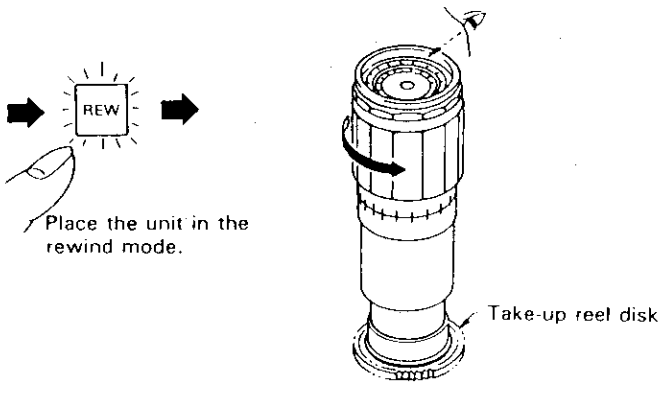
Place the torque gauge on the supply reek disk, and turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm

Figure 1-33.

Note :
Set the torque gauge securely on the supply reel disk. If the torque gauge is not securely set on the reel disk, measurement will be incorrect.

CHECKING THE REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Checking



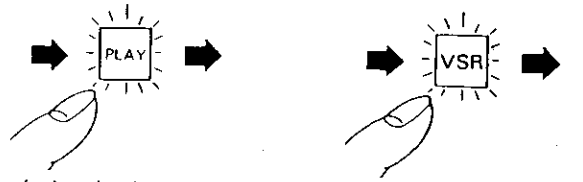
Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm.

Figure 1-34.

torque gauge securely on the take-up reel
it is not secure, the measurement will be
t.

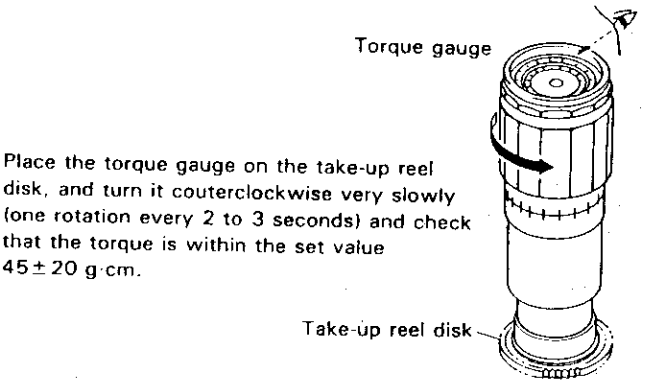
CHECKING THE VIDEO SEARCH REWIND BACK TENSION

- Remove the cassette housing control assembly.
- Checking



Push the play button to place the unit in the playback mode.

Push the video search rewind button to place the unit in the video search rewind mode.



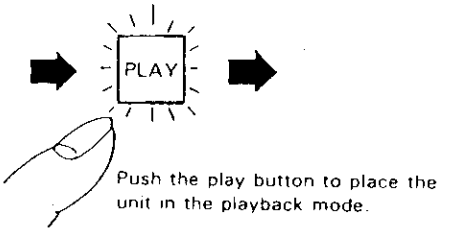
Place the torque gauge on the take-up reel disk, and turn it couterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 45 ± 20 g·cm.

Figure 1-35.

Note :
Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE PINCH ROLLER PRESSURE

- Remove the cassette housing control assembly.



Push the play button to place the unit in the playback mode.

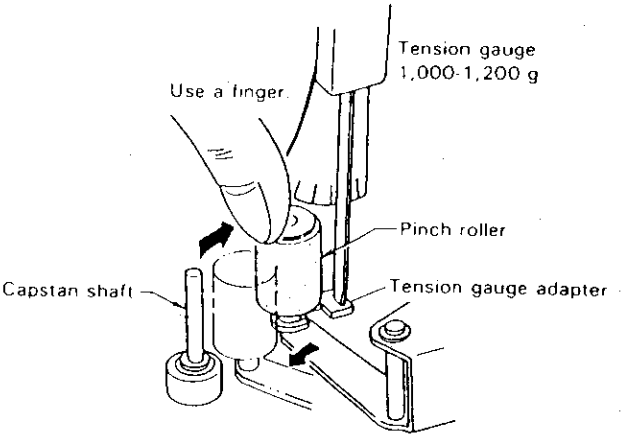
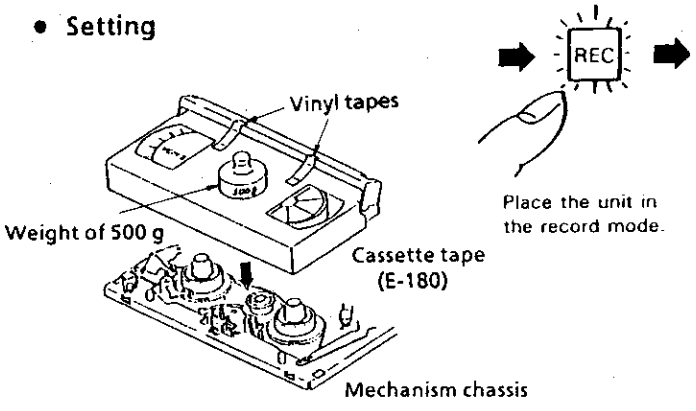


Figure 1-36.

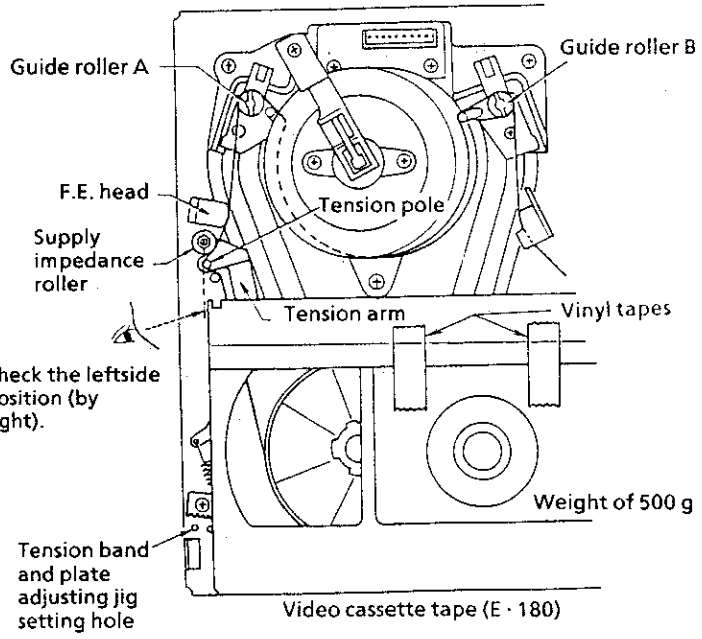
1. Detach the pinch roller from the capstan shaft.
2. Set the tension gauge by hooking the tension gauge adapter onto the pinch roller shaft.
3. Gradually release the pressure to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
4. Check that the reading of the tension gauge is in the range of 1000 to 1200 g.

CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- Remove the cassette housing control assembly.
- Setting



(a)



(b)

Figure 1-37.

- Checking

1. The guide rollers (A, B) operate to bring the tape outside the cassette tape and simultaneously the tension pole moves to the left, loading the tape. At that time (loading completed), check the position of the tension pole.
2. At the beginning of the tape (E-180), check that the tension pole's left side is aligned with the supply impedance roller's center by sight.
3. Check that the end of the tape is neither curled against the flange of the supply impedance roller nor over it.
4. During the video search rewind mode with no cassette tape in place, check that the supply reel disk is free from the tension band.

- Position adjustment (record mode)

When the tension pole is at the right of the supply impedance roller's center:
Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting jig until it is in the set value range (center). Then secure it with the tightening screw.

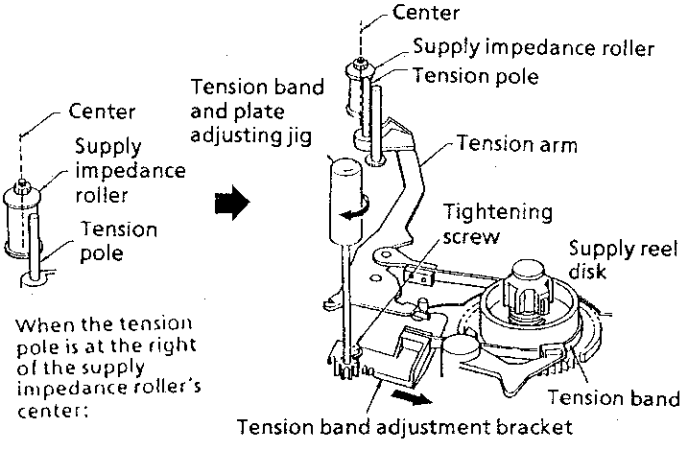


Figure 1-38.

- Position adjustment (record mode)

When the tension pole is at the left of the supply impedance roller's center.
Untighten the tightening screw, and shift th tension band adjustment bracket in the direction the arrow using a tension band and plate adjusti jig until it is in the set value range (center). Th secure it with the tightening screw.

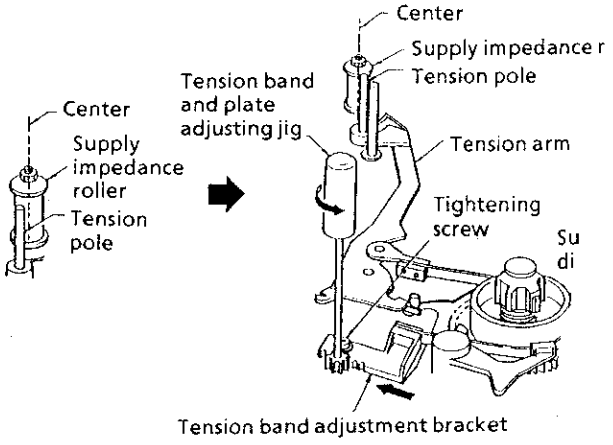


Figure 1-39.

CHECKING AND ADJUSTMENT OF RECORD / PLAYBACK BACK TENSION

A. When using a cassette torque meter :

- Remove the cassette housing control assembly.

- Checking

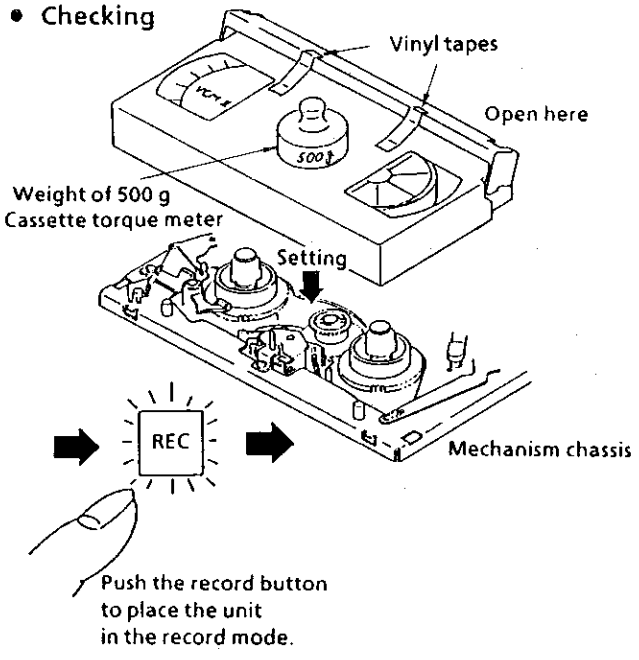


Figure 1-40.

1. Put a cassette torque meter into the unit.
2. Push the record button to place the unit in the record mode.
3. Check that the back tension indicated by the gauge is within the set range 31 to 36 g.cm.

lotes :

. Make sure that the video cassette tape is over the retaining guide.
Make sure that the tape is not slack nor damaged at either end.

Adjustment

f the reading of the cassette torque meter is less han specified, move the tip of the tension spring ook plate toward the hole A.

the reading of the cassette torque meter is ore than specified, move the tip of the tension ing hook plate toward the hole B.

a thin screw driver (-) in the shaft hole, lean oward you, and turn it for easier shift of the sion spring hook plate in the direction of A or

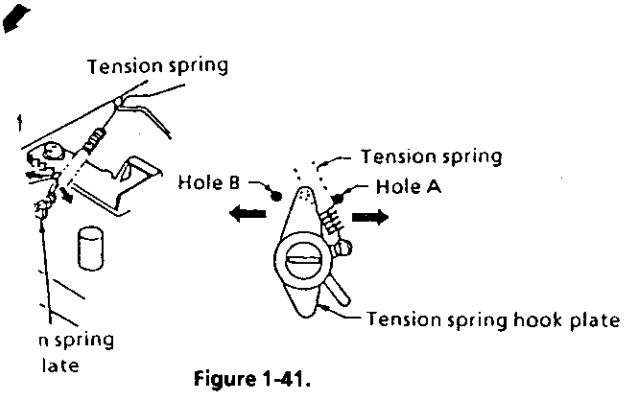


Figure 1-41.

Figure 1-42. Not used.

CHECKING THE BRAKE TORQUE

- Checking the brake torque at the supply side

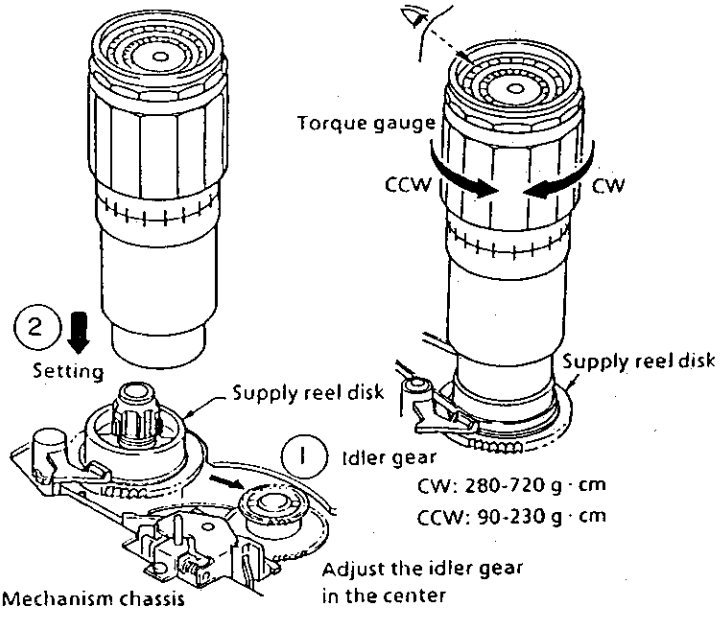


Figure 1-43.

1. Remove the cassette housing control assembly.
2. Place the mechanism in the stop mode by unplugging the power cord in the fast forward or rewind mode.
3. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the supply brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CW direction = 280 to 720 g. cm, CCW direction = 90 to 230 g.cm, and that the brake torque in the CW direction is at least twice as high as that in the CCW direction.

- Checking the brake torque at the take-up side

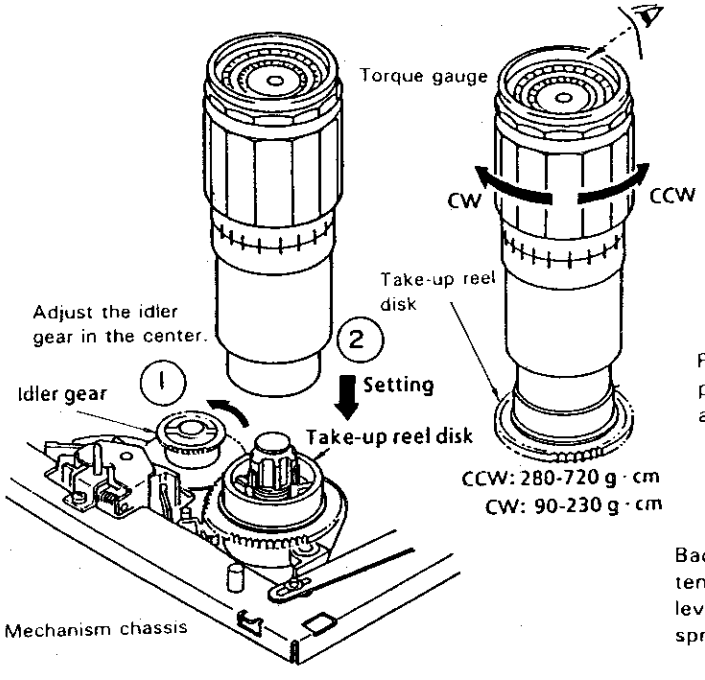


Figure 1-44.

1. Remove the cassette housing control assembly.
2. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the take-up brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CCW direction = 280 to 720 g. cm, CW direction = 90 to 230 g.cm, and that the brake torque in the CCW direction is at least twice as high as that in the CW direction.

- **Adjustment of the brake torque at the supply side and the take-up side**

1. If the supply or take-up brake torque is outside the range clean the supply or take-up reel disk break lever felt, then recheck the torque.
2. If the supply or take-up brake torque is still outside the range, replace the main brake or the main brake spring.

REPLACEMENT OF MAIN BRAKE

1. Remove the reel belt and the reel block FFC. (Full Flat Cable)
2. Remove the cut washer ① off the brake shifter.
3. Unscrew the four screws ② and then the take-up reel retainer.
4. Remove the reel block assembly Ⓐ downward.
5. Remove the cut washer ③ first and then the reel pulley.
6. Unscrew the two screws ④ and detach the idler assembly.
7. Unhook the back tension lever spring ⑤ and remove the back tension lever ⑥. (Undo the hook under the reel chassis.)
8. Open the shifter latch ⑦ and remove the brake shifter assembly ⑧.
9. Release the reel disk latch ⑬ and then remove the left and right reel disk assemblies ⑨ and ⑩.
10. Unhook the main brake levers ⑪ and the main brake spring ⑫ together.

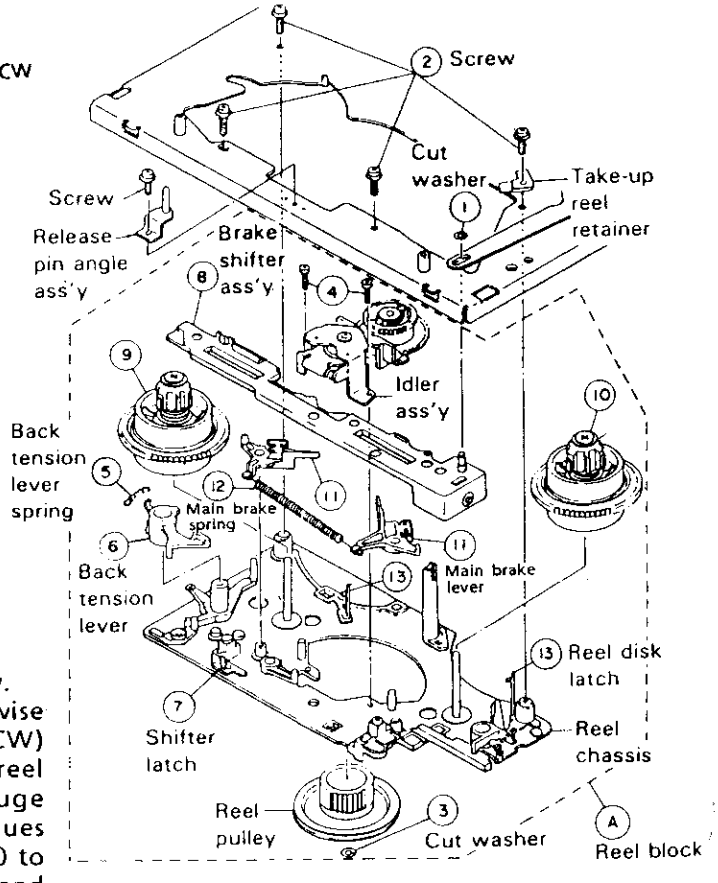


Figure 1-45.

Note :
When the main brake is replaced, perfor height checking and adjustment (See page 1 the brake torque checking (See page 20).

MC-Service

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. Place the unit in the unloading mode, and unplug the power cord.

• Removal

1. Loosen the tilt adjusting screw ①.
2. Remove the azimuth adjusting screw ②.
3. Remove the A/C head screw ③.
4. Unsolder the A/C head PWB soldered to the A/C head assembly.

Note :

1. After replacement, be sure to perform the adjustment of the tape drive train (See page 24). Under any circumstances, avoid touching the head.
2. Take care that the azimuth spring does not fly off when removing the A/C head screw.

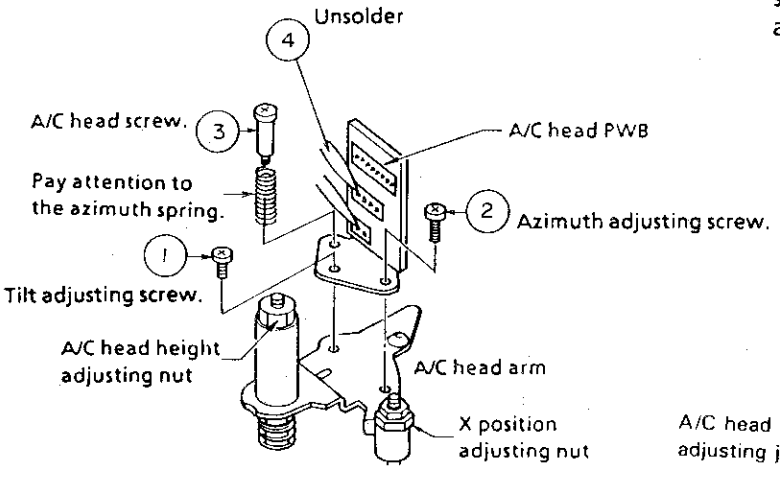


Figure 1-46.

• Replacement

1. Solder the removed A/C head PWB onto a new A/C head assembly.
2. The A/C head assembly is attached so that the A/C head arm and A/C head plate are roughly parallel to each other.

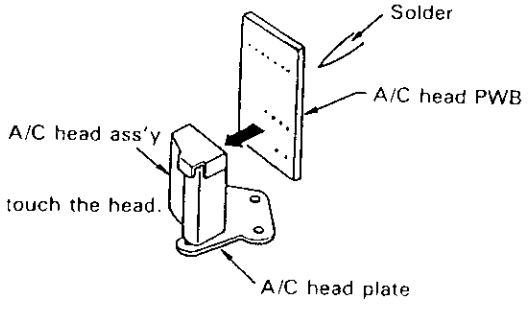


Figure 1-47.

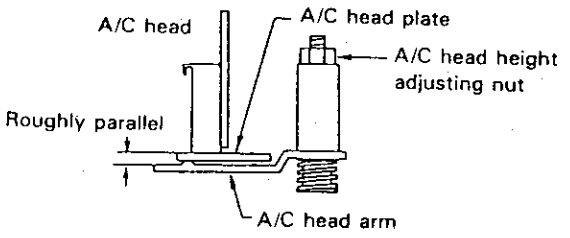
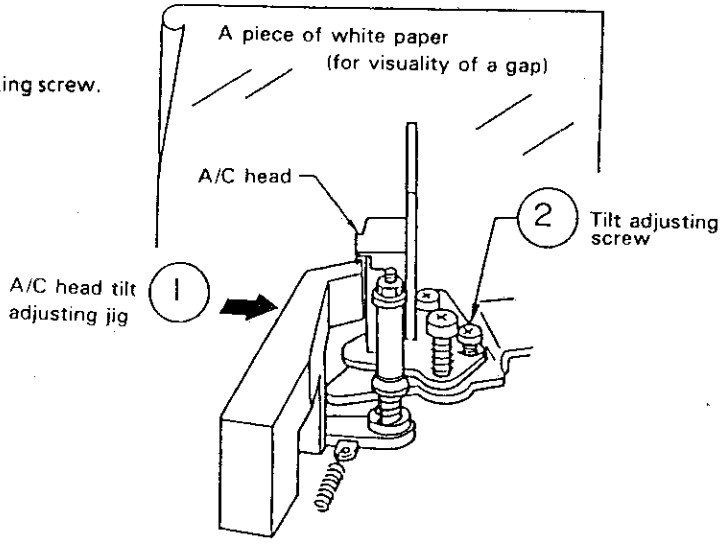


Figure 1-48.

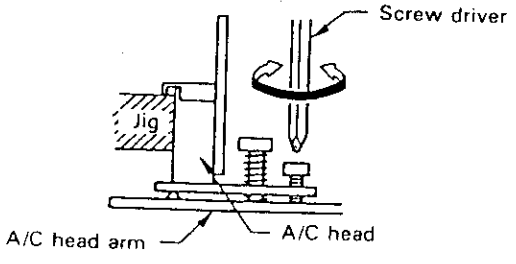
• Adjustment

[A/C head tilt angle]

1. Set the mechanism to the loading mode.
2. Place the A/C head tilt adjusting jig ① .
3. Slowly turn the tilt adjusting screw ② with a screw driver until there is no gap between the jig and the A/C head.



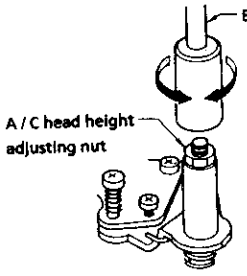
(a)



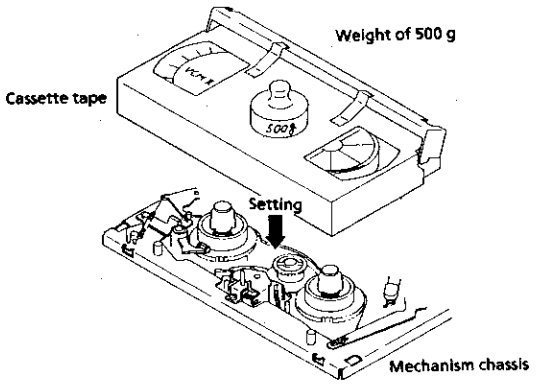
(b)

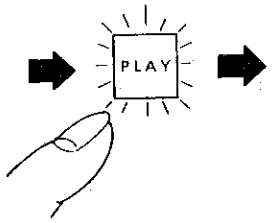
Figure 1-49.

[A/C head height rough adjustment]



Roughly adjust the height of the A/C head by turning the A/C head adjusting hexagon nut with the specialized box driver until the tape is in the position shown below.





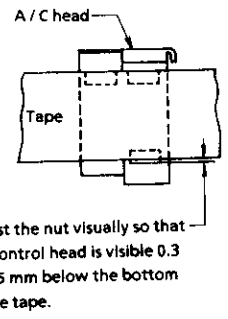


Figure 1-50.

HEIGHT ADJUSTMENT OF RETAINING GUIDE AND REVERSE GUIDE

Note :

Before the rough adjustment of the tape drive train, check that the retaining guide height is within the value in Figure 1-51 by using the special jigs.

[Height adjustment of retaining guide]

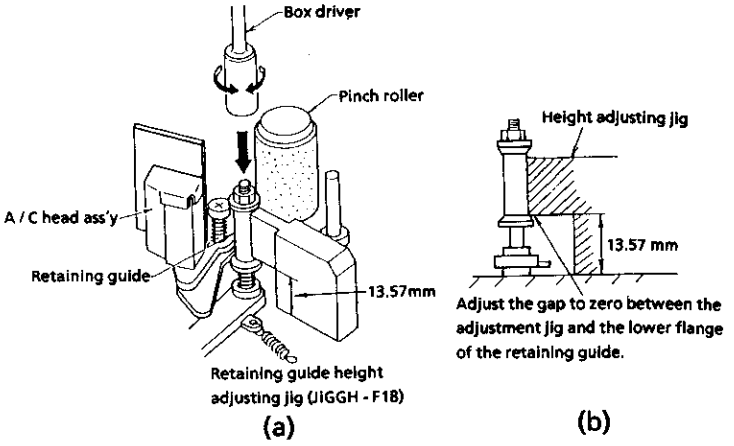
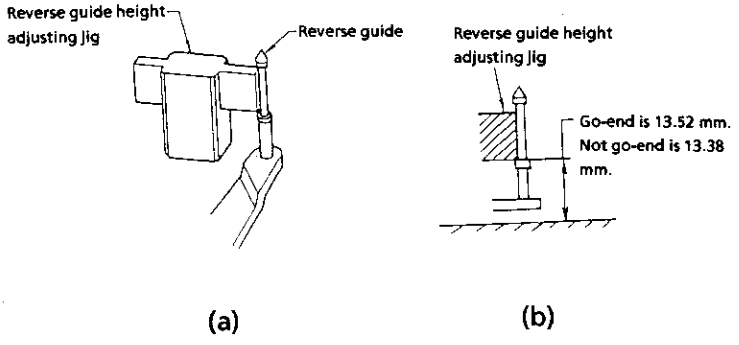

Box driver
Pinch roller
A / C head ass'y
Retaining guide
13.57mm
Retaining guide height adjusting jig (JIGGH - F18)
(a)
Height adjusting jig
13.57 mm
Adjust the gap to zero between the adjustment jig and the lower flange of the retaining guide.
(b)

Figure 1-51.

[Height adjustment of reverse guide]



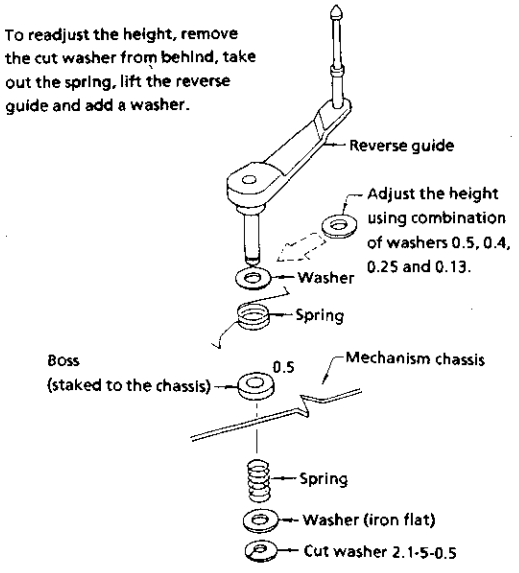

To readjust the height, remove the cut washer from behind, take out the spring, lift the reverse guide and add a washer.
Reverse guide
Adjust the height using combination of washers 0.5, 0.4, 0.25 and 0.13.
Washer
Spring
Boss
(staked to the chassis)
0.5
Mechanism chassis
Spring
Washer (iron flat)
Cut washer 2.1-5-0.5
(c)

Figure 1-52.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Remove the cassette housing control assembly.
2. Check and adjust the position of the tension pole. (See page 19.)
3. Check and adjust the video search rewind back tension. (See page 18.)
4. Set the tilt angle of the A/C head. (See page 22.)
5. Rough adjustment of tape drive train.
   a) Connect the oscilloscope to the test point for PB CHROMA envelope output (TP501). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching jpulse (TP502).
   b) Loosen the setscrew at the lower part of the guide roller, and adjust it with an adjusting screw driver (JIGDRIVERH-4) so that the guide roller turns smoothly. (Do not overloosen the setscrew, which causes insecurity of the guide roller.) (See Figure 1-53.)
   c) Set the alignment tape (monoscope pattern) on the reel disk, and place the unit in the playback mode.
   (Place a 500g. weight on the cassette tape to prevent floating of the cassette tape.)

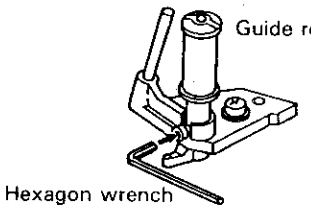


Figure 1-53.

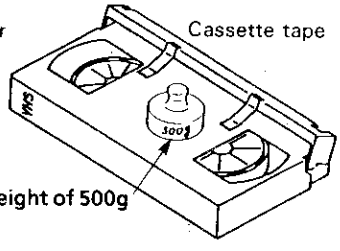


Figure 1-54.

   d) Change the envelope waveform from MAX to MIN, and MIN to MAX by pushing the (+) or (–) tracking button, and check a flat response is obtained on the waveform.
   e) If a flat response cannot be obtained, roughly adjust the guide rollers on the supply side and take-up side using an adjusting screw driver until a flat response can be obtained.
   f) Turn the A / C head tilt adjusting screw with a screwdriver to prevent the tape from wrinkling at the upper and lower flanges of the fixed guide.
      1) Wrinkles at the upper flange : Turn the above adjusting screw clockwise, as shown in Fig. 1 - 55 (a)
      2) Wrinkles at the lower flange : Turn the above adjusting screw counterclockwise, as shown in Fig. 1 - 55 (b)

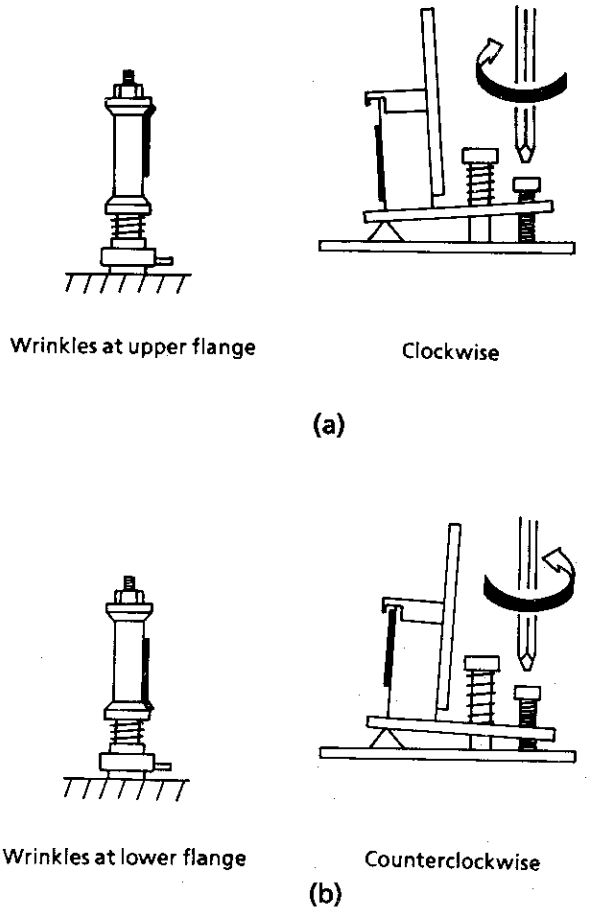


Figure 1-55.

Notes:

1. Place the tracking control in the center position, and adjust the X-position adjusting nut so that the PB CHROMA envelop becomes maximum for easier rough adjustment of the tape drive train.
2. In the rough adjustment, pay particular attention to the outlet side.

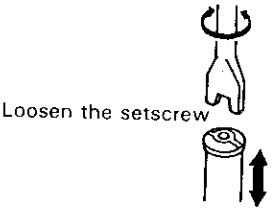


Figure 1-56.

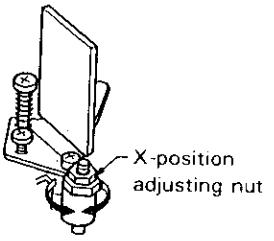


Figure 1-57.

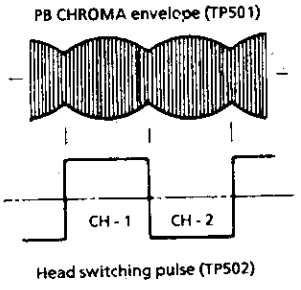


Figure 1-58.

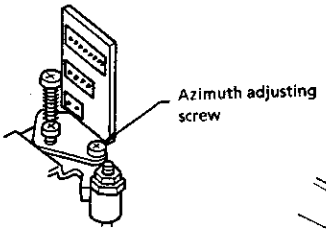


Figure 1-59.

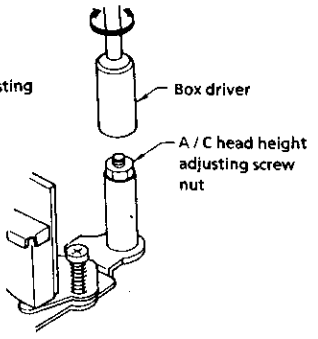


Figure 1-60.

6. Adjustment of A/C head height and azimuth
   a) Connect an oscilloscope to the audio output terminal.
   b) Use the alignment tape and play back its audio 6 kHz signal (monoscope pattern for video signal). Adjust the azimuth adjusting screw to obtain the maximum audio output on an oscilloscope. (See Figure 1-59.)
   c) Use the alignment tape and play back its audio 1 KHz signal (colour bar for video signal) and slowly rotate the A/C head height adjusting nut with the special box driver to obtain the maximum audio output.
   d) Perform the adjustment in b) again.
   e) After this adjustment, apply glyptal to the screws and nuts to fix them.

7. Adjustment of tape drive train and X-Position.
   a) Connect the oscilloscope to the test points (TP501) for PB CHROMA envelope output. Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP502).
   b) Play back the tape drive train alignment tape.
   C) Push the (+) or (–) button to change the envelope waveform from MAX to MIN, and MIN to MAX. Adjust the guide roller's height on the supply and take-up sides with an adjusting screw driver, to obtain an envelop waveform that is as flat as possible.
   d) If the tape is above or below the helical lead, the PB CHROMA waveform will take the shape shown in Figure 1-61.
   e) Adjust for maximum flatness of the envelope as the step 5, e) in page 24.

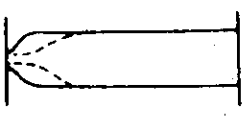
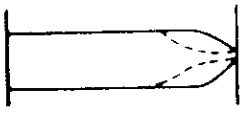
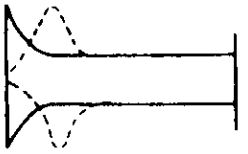
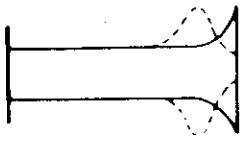
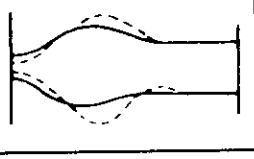
	When the tape is above the helical lead.		When the tape is below the helical lead.	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 1-61.

f) Push the (+) or (–) tracking button to check that a flat response is obtained on the envelope waveform.
g) Secure the guide roller by tightening the guide roller setscrew in the unloading mode.
h) Play back the tape drive train alignment tape to check that the envelope waveform does not change.

8. Adjustment of A/C head X-position.
a) Push the (+) and (–) tracking buttons at the same time to the preset mode.
b) Rotate the X-position adjusting nut with an adjusting box driver, and adjust the A/C head position for maximum head switching pulse low side envelope.
c) Adjust the playback switching point.
d) Check the flatness of the envelope waveform and sound by playing back a recorded tape.

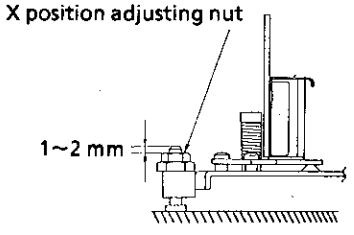


Figure 1-62.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

1. Remove the cassette housing control assembly.

Removal (Follow the order of indicated numbers.)

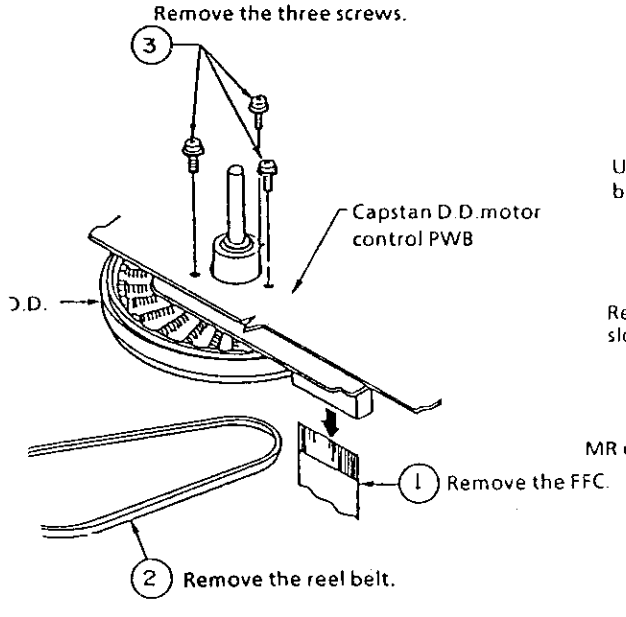


Figure 1-63.

- Reassembly

1. Mount the capstan motor on the mechanism chassis making sure not to allow the capstan shaft to hit the mechanism chassis, and attach it with the three screws.
2. Insert the FFC into the capstan D.D. motor control PWB.
3. Attach the reel belt.

Notes :
1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Check and adjust the servo circuit.

REMOVAL AND REASSEMBLY OF THE LOADING GEAR BLOCK

Notes : The following explanation is based on 4-head models. (The slow brake spring and slow brake lever are not provided on 2-head models.)

1. Remove the cassette housing control assembly.
2. Remove the reel belt.
3. Remove the reel block.

- **Removal**

Notes :
1. Use care not to deform the parts hooked to the slow brake shaft cap, take-up loading gear, and supply loading gear as shown in Figure 1-64.

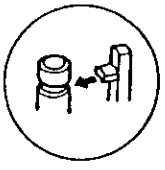


Figure 1-64.

2. In removing the loading gear, secure the guide roller with a rubber band or the like beforehand for easier reassembly.

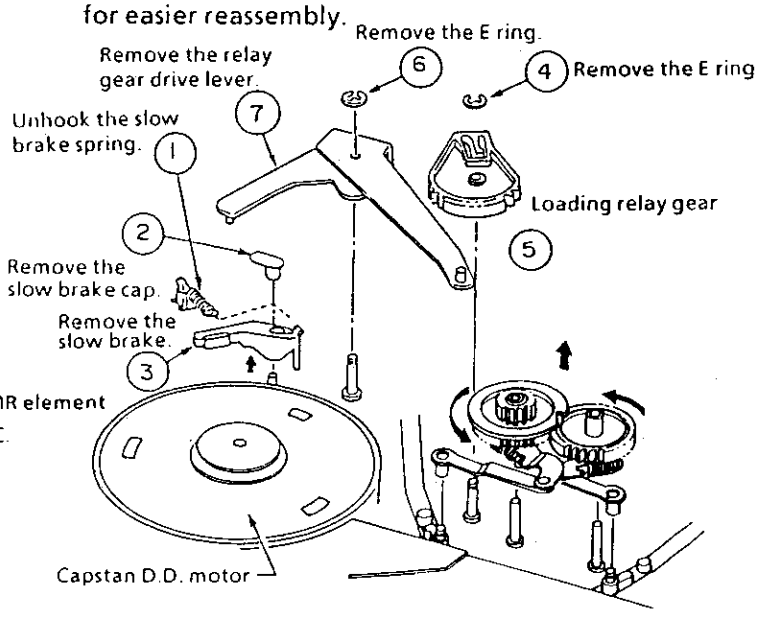


Figure 1-65.

1. Remove the slow brake spring ①.
2. Remove the slow brake shaft cap ②.
3. Remove the slow brake lever ③.
4. Remove the E ring ④.
5. Rotate the take-up loading gear, take-up loading arm assembly, supply loading gear and supply loading arm assembly slightly in the loading direction, and take them ⑤ all out.
6. Remove the E ring ⑥.
7. Remove the relay gear drive lever ⑦.

- Reassembly
  Reverse the procedure. Be sure to match the tally marks on the gears.

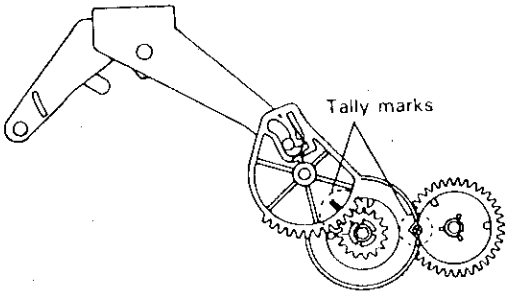


Figure 1-66.

Notes :

1. When reassembling, apply specified grease to the following points; all the gear teeth, all the gear shafts and the cam groove of loading relay gear.
2. Be careful not to deform the supply/take-up loading arms.
3. Be careful to keep clean the slow brake lever felt.
4. Be also careful to keep the outer surface of the capstan D.D. motor free from dust and dirt. (If stained, the MR (Magnet Resistor) element might be damaged.)
5. Take care not to deform the anti-fall hooks of the slow brake lever, slow brake shaft cap and supply/ take-up lading gears more than required.

REMOVAL AND REASSEMBLY OF LOADING BLOCK

- Removal

1. Remove the leads ①.
2. Remove the cassette loading belt ②.
3. Unscrew the three screws ③.
4. Pull the loading block upward.

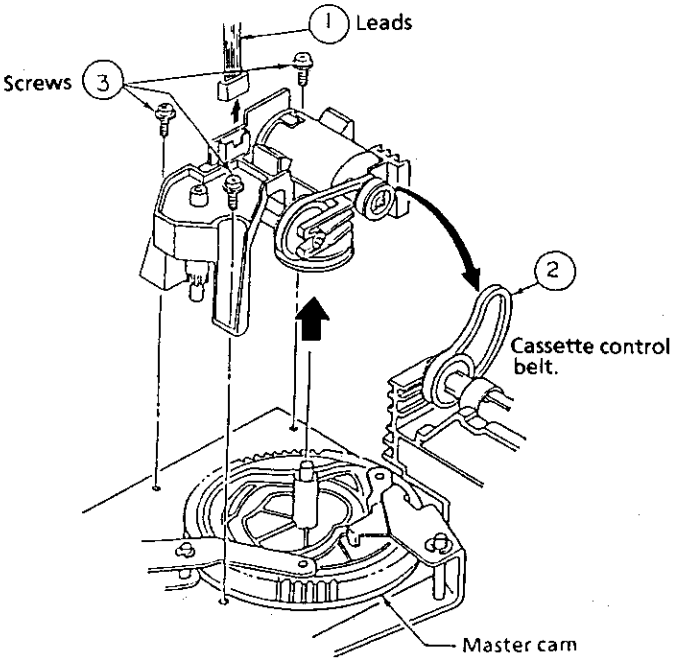


Figure 1-67.

Note :
When using a magnetic screw driver in removal of three screws, do not allow the magnetic driver to hit the A/C head or drums.

- Reassembly

1. Turn the master cam all the way counterclockwise.
2. Match the tally mark on the cam switch with the mating mark. Fit the loading block and the master cam with each other. Tighten up the three screws.

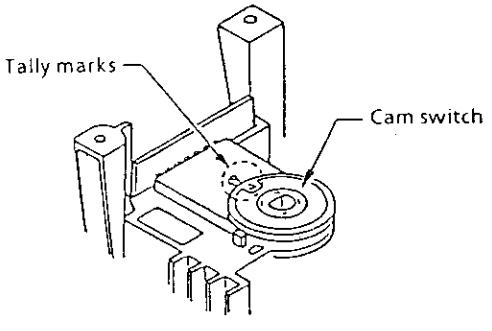


Figure 1-68.

3. Finally connect the leads and apply the cass loading belt.

Notes:

1. Be careful not to scratch the gear.
2. Be careful not to stain the belt. If dirty, cle up with the specified cleaning liquid.

REPLACEMENT OF LOADING MOTOR

1. Set the cassette ejected condition by placi unit in the cassette eject mode.
2. Unplug the power cord.
3. Remove the loading block in accordanc the statements and drawings above.

• Removal

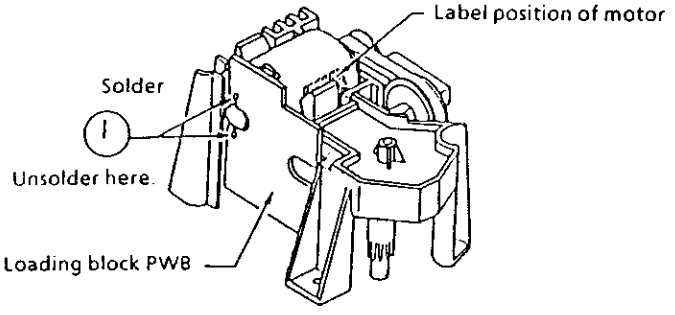


Figure 1-69.

1. Unsolder the leads ① from the loading motor.
2. Unlock the left and right catches ② of the cam switch off the loading block. Take out the cam switch and loading block PWB (See Figure 1-70).

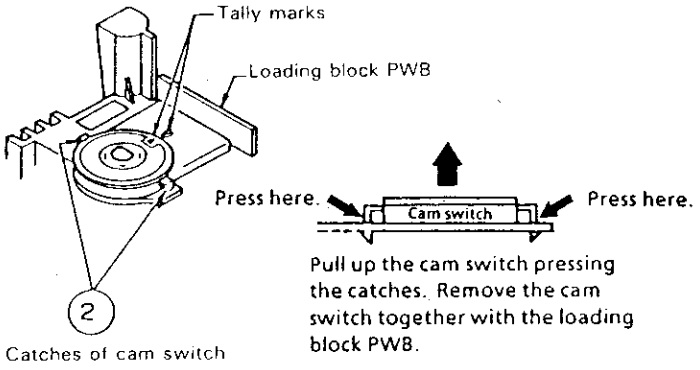

Tally marks
Loading block PWB
Press here.
Cam switch
Press here.
Pull up the cam switch pressing the catches. Remove the cam switch together with the loading block PWB.
2
Catches of cam switch

Figure 1-70.

3. Take out the loading belt ③.
4. Pry up the back end of the loading motor with a screw driver or the like as in Figure 1-71 and take out the motor ④.

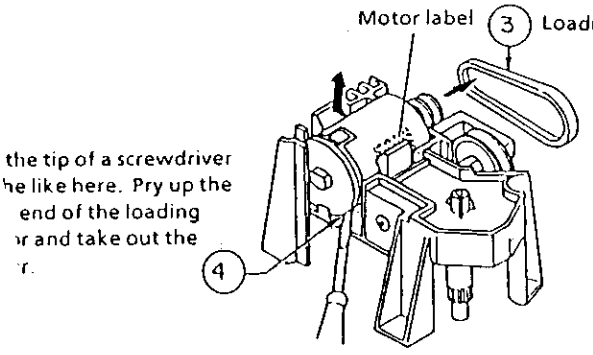


Figure 1-71.

ssembly

ove the loading motor, and mount a new ing motor as in Figure 1-72.

the loading motor so that its label is visible own in Figure 1-72. Make sure that the hole at the motor shaft, protuberance on ading block, and the motor's back end d with the arrow are mated with each

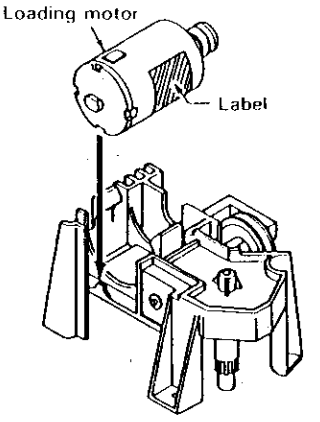
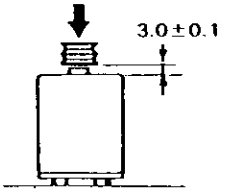


Figure 1-72.



Note:
When press-fitting the loading motor pulley, keep the pressure less than 5 kg, and the gap between the motor and pulley should be 3.0±0.1 mm.

Figure 1-73.

3. Set the lading block PWB and the cam switch in position.
4. Resolder the leads to the loading motor.
5. Finally place the loading block **(See page 27).**
6. Attach the loading belt.

REPLACEMENT OF MASTER CAM

• **Removal**

1. Remove the E ring ①.
2. Remove the half loading drive lever ②.
3. Remove the E ring ③.
4. Remove the pinch roller lever ④.
5. Pull out the master cam ⑤ upward .

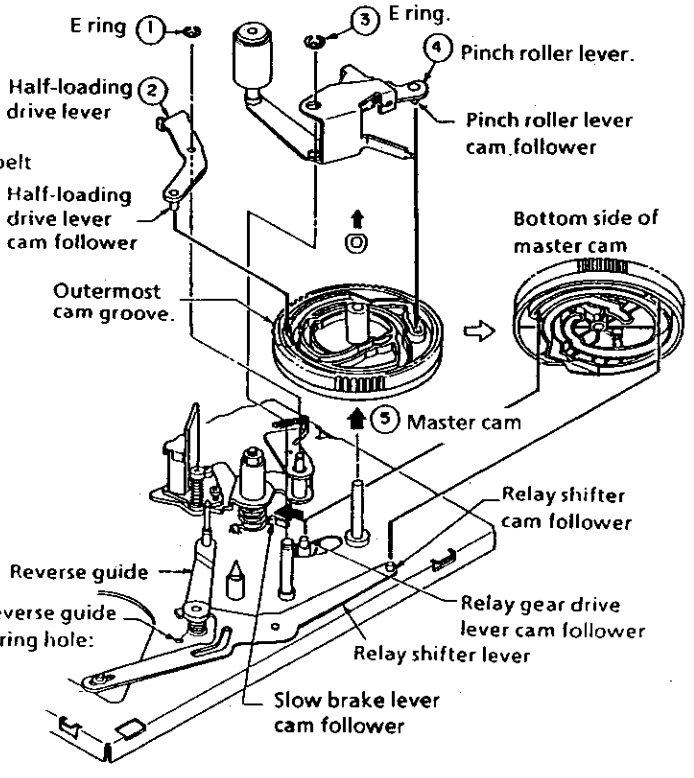


Figure 1-74.

- Reassembly

1. Place the relay gear drive lever in the unloading state.
2. Place the relay shifter so that it is in contact with the reverse guide spring hole in the mechanism chassis. Release the slow brake lever with a finger to bring it away from the capstan (in the direction of arrow). Then place the master cam so that the D cut-off part of the master cam faces the direction of arrow.
3. Place the half loading recipro lever's cam follower so that it fits in the master cam's circumferential cam groove (marked with arrow), attach the E ring, then mount the half-loading recipro lever.
4. Turn the master cam somewhat clockwise until the pinch roller lever's cam follower goes into the master cam's groove (marked with arrow). Mount the pinch roller lever and then attach the E ring.
5. Rotate the master cam by hand to make sure all the four levers (relay gear drive lever, half-loading recipro lever, pinch roller lever, and relay shifter lever) are in the cam grooves in place.
6. Mount the loading block. (See page 27.)

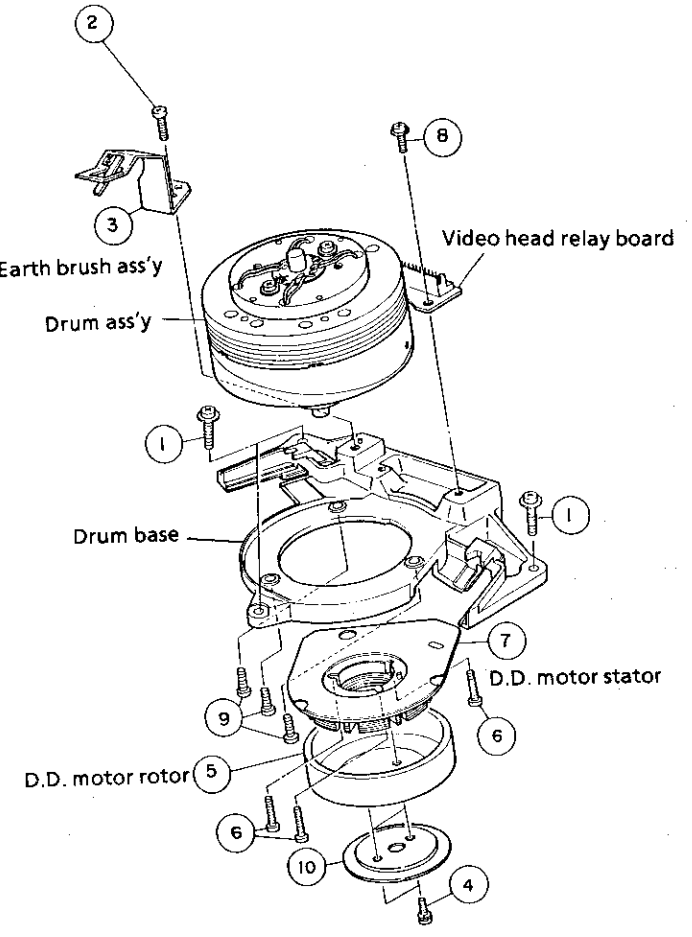
Notes :

1. Be careful not to scratch the teeth and grooves of the master cam.
2. After installation of the master cam, be sure to rotate the master cam by hand before installing the loading block. If the levers are in wrong position, the master cam and the levers may get damaged when the motor stares.
3. Apply specified grease to the master cam's grooves and teeth.

REPLACEMENT OF DRUM ASSEMBLY

- Removal

1. Remove the head amp. PWB from the video head relay board.
2. Remove the bottom board (Ref. No ④ in the Cabinet Parts Diagram).
3. Remove the D.D. drum motor connector (ME).
4. Loosen the Drum-base mounting screws ① and remove the drum ass'y from the mechanism chassis.
5. Loosen the Earth brush ass'y mounting screw ② and remove the Earth brush ass'y ③.
6. Loosen the two D.D. motor rotor mounting screws ④ and remove the D.D. motor rotor ⑤.
7. Loosen the three D.D. motor stator mounting screws ⑥ and remove the stator ⑦.
8. Remove the two video head relay board mounting screws ⑧
9. Loosen the three drum ass'y mounting screws ⑨ and remove the drum ass'y from the Drum-base.



Note:
Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum match.

Figure 1-75.

• Reassembly

1. Set the new drum.
2. Place the relay PWB as shown in the figure and solder it securely.

Notes:

1) Before setting the drum, make sure that there is no scratches or dust on the end surface and circumference of the disk.
2) Before setting the drum, make sure that there is no scratches or dust on the internal surface and end surface of the upper drum.
3) Install the upper drum onto the disk with such care that the upper drum is not tilted.
4) When reassembling these parts, do not allow dust and dirt to come between the disk and the upper drum.
5) Do not use excessive force when driving in the screws.

1. Fasten the upper drum in place with the two setscrews.
2. Solder the leads quickly and carefully without touching adjacent patterns.
3. Finally be sure to check the tape drive train adjustment and the following electrical adjustments.
   * Adjustment of the playback switching point
   * Checking and adjustment of the X-position
   * Adjustment of SP and EP slow tracking preset

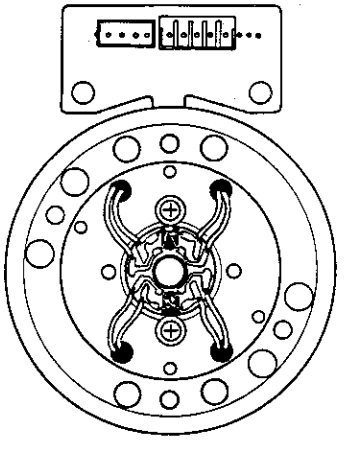


Figure 1-76.

REPLACEMENT OF D.D. MOTOR

1. Put the unit in the eject mode.
2. Unplug the power cord from the wall socket.

* Removal (Follow the order of the indicated numbers.) (Reverse the order in reassembly.)

1. Remove the FFC.
2. Remove the D.D. rotor assembly set-screws.
3. Pull out the D.D. rotor assembly.
4. Remove the D.D. stator assembly set-screws.
5. Pull out the D.D. stator assembly.

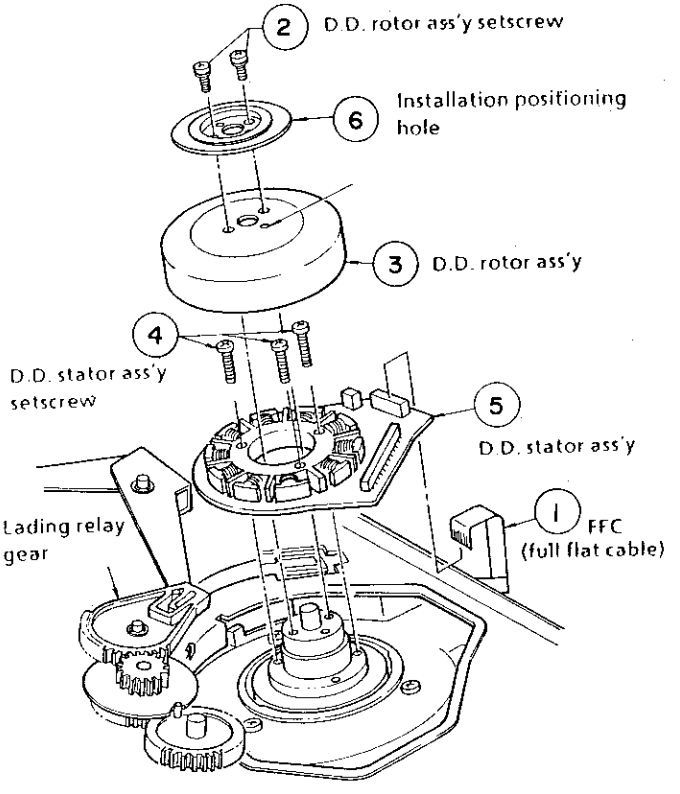


Figure 1-77.

1) When removing the D.D. rotor assembly and the D.D. stator assembly, use care not to hit them against the loading relay gear.

2) Match the positioning hole in the D.D. rotor assembly and that in the lower drum assembly with each other and secure them together.

Notes:

1) Be careful not to damage the upper drum and the video head.
2) Be careful not to give impacts to the Hall element, D.D. stator and D.D. rotor assemblies, and other component parts.
3) After installation, adjust the playback switching point.

ADJUSTMENT OF ELECTRICAL CIRCUITRY

Prior to the adjustment:
In most cases, necessity for electrical circuits will arise from replacement of mechanical parts including the video head. Before starting adjustment of electrical circuits, check that mechanical operation of the equipment is complete (the mechanism is adjusted completely).

If the equipment fails electrically, locate a defect or defects first of all using instruments. Then repair or replace parts and make adjustment by the procedures described below.
When required instruments are not available, do not move controls indiscriminately.

- **Instruments**
  - Colour monitor TV
  - DC regulated power supply
  - VTVM
  - Oscilloscope
  - Audio generator
  - Voltmeter
  - Colour bar generator
  - Alignment tape
  - Frequency counter
  - Blank video tape (VHS)

ADJUSTMENT OF MAIN (SERVO, SYSTEM CONTROL, TUNER) CIRCUIT

- Test points layout

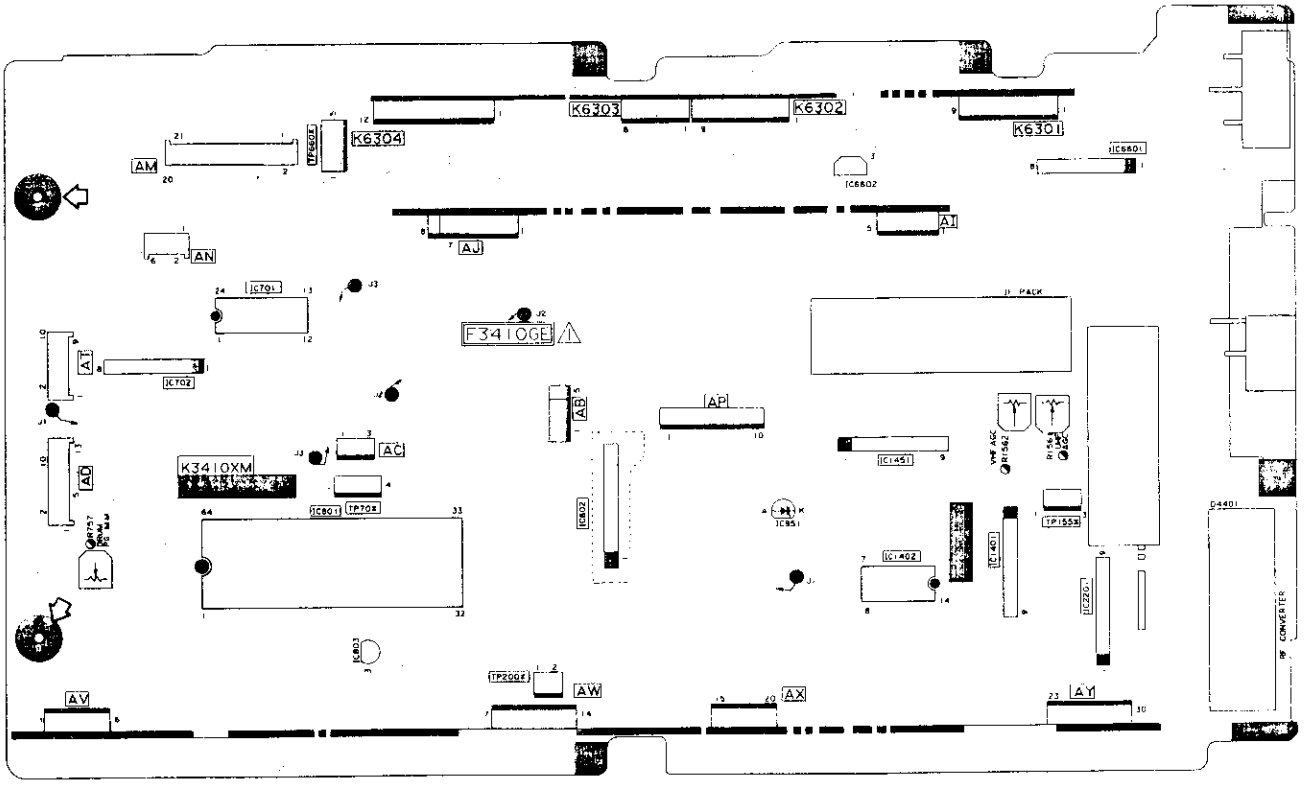


Figure 2-1. MAIN PWB

MC-Service

- Reassembly

1. Set the new drum.
2. Place the relay PWB as shown in the figure and solder it securely.

Notes:

1) Before setting the drum, make sure that there is no scratches or dust on the end surface and circumference of the disk.
2) Before setting the drum, make sure that there is no scratches or dust on the internal surface and end surface of the upper drum.
3) Install the upper drum onto the disk with such care that the upper drum is not tilted.
4) When reassembling these parts, do not allow dust and dirt to come between the disk and the upper drum.
5) Do not use excessive force when driving in the screws.

1. Fasten the upper drum in place with the two setscrews.
2. Solder the leads quickly and carefully without touching adjacent patterns.
3. Finally be sure to check the tape drive train adjustment and the following electrical adjustments.
   * Adjustment of the playback switching point
   * Checking and adjustment of the X-position
   * Adjustment of SP and EP slow tracking preset

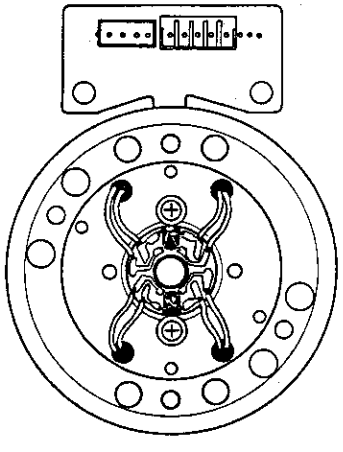


Figure 1-76.

REPLACEMENT OF D.D. MOTOR

1. Put the unit in the eject mode.
2. Unplug the power cord from the wall socket.

* Removal (Follow the order of the indicated numbers.) (Reverse the order in reassembly.)

1. Remove the FFC.
2. Remove the D.D. rotor assembly set-screws.
3. Pull out the D.D. rotor assembly.
4. Remove the D.D. stator assembly set-screws.
5. Pull out the D.D. stator assembly.

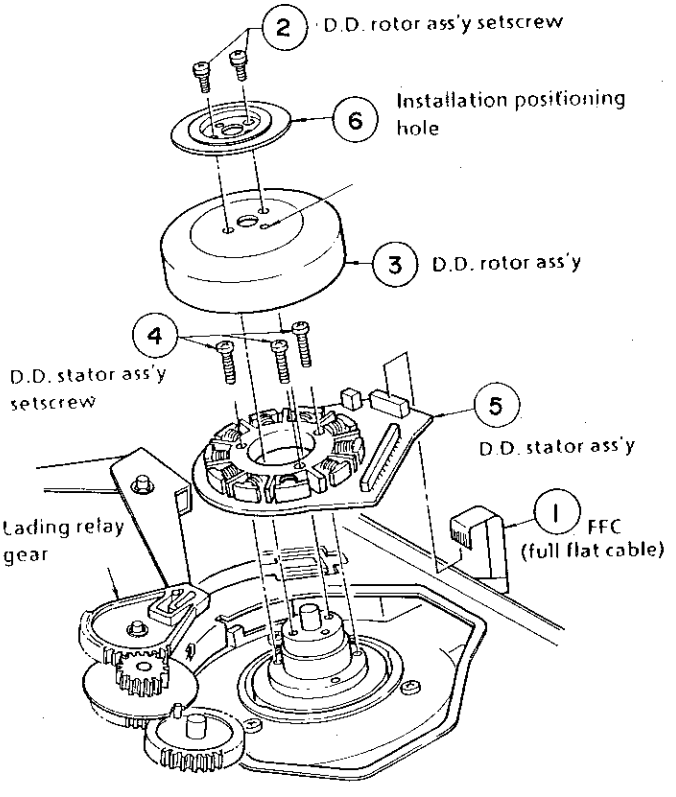


Figure 1-77.

1) When removing the D.D. rotor assembly and the D.D. stator assembly, use care not to hit them against the loading relay gear.

2) Match the positioning hole in the D.D. rotor assembly and that in the lower drum assembly with each other and secure them together.

Notes:

1) Be careful not to damage the upper drum and the video head.
2) Be careful not to give impacts to the Hall element, D.D. stator and D.D. rotor assemblies, and other component parts.
3) After installation, adjust the playback switching point.

■ ADJUSTMENT OF SERVO CIRCUIT

Adjustment of playback switching point

Measuring instrument	Oscilloscope
Mode	Playback (tracking at center)
Tape used	Alignment tape (VROCPSV)
Test point	CH-1; TP701 CH-2; Video output terminal.(CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Control	R757 (phase genrator MM control)
Specification	6.5 ± 0.5H

1. Insert the alignment tape and put the unit in the playback mode.
2. Press both tracking control button at the same time to set the tracking in center.
3. Adjust R757 (phase generator MM control) so that the waveform on the oscilloscope screen be as shown in Figure 2-2.

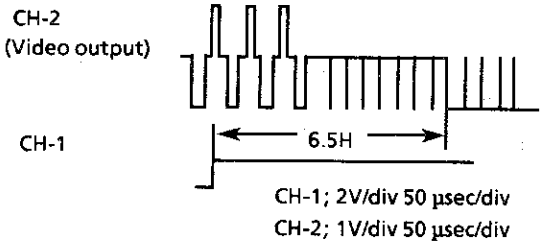


Figure 2-2.

Adjustment of slow / still tracking preset

Measuring instrument	Monitor TV
Mode	Recording and playback on self-recording tape.
Input signal	Commercial broadcast or video signal. (external input selector switch)
Test point	Monitor screen.
Adjusting point	Tracking control button (+), (−)
Specification	No noise bar on the monitor TV screen.

1. Play back the self-recorded tape in the slow mode.
2. Make the cathode of the timer D5003 and J108 on timer PWB short-circuited.
3. Be sure that all the fluorescent display tubes light up.
4. Remove the short-circuit and make sure that "CASS" appears on all the above display tubes.
5. Adjust the tracking control using the TRACKING button on the main unit or the remote controller so that there is no noise on the screen.

Adjustment of still picture vertical sync (FV)

Measuring instrument	Monitor TV
Mode	Still picture playback
Input signal	Self-recording tape
Test point	Monitor screen
Adjusting point	Tracking control button (+), (−)
Specification	No noise jitter

1. Play back the self-recorded tape in the still mode.
2. Using the TRACKING button on the main unit or the remote controller, make adjustment so that jitter becomes minimum.
3. Now press the STOP button to stop the tape.

Precaution Adjusting the X-position

Measuring instrument	Oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV)
Test Point	CH-1; TP701(Head switching Pulse) CH-2; TP702(Playback control) (CH-1 Oscilloscope Triggers)
Adjusting point	———
Specification	T = 30.58msec.

1. Insert the alignment tape and put the unit in the playback mode.
2. Press both tracking control button at the same time to set the tracking in center.
3. Make sure that the waveform on the oscilloscope screen be as shown in Figure 2-3.

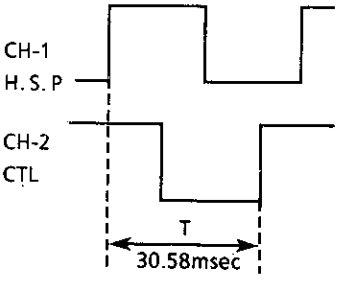


Figure 2-3.

MC-Service

■ ADJUSTMENT OF Y / C CIRCUIT

● Test points layout

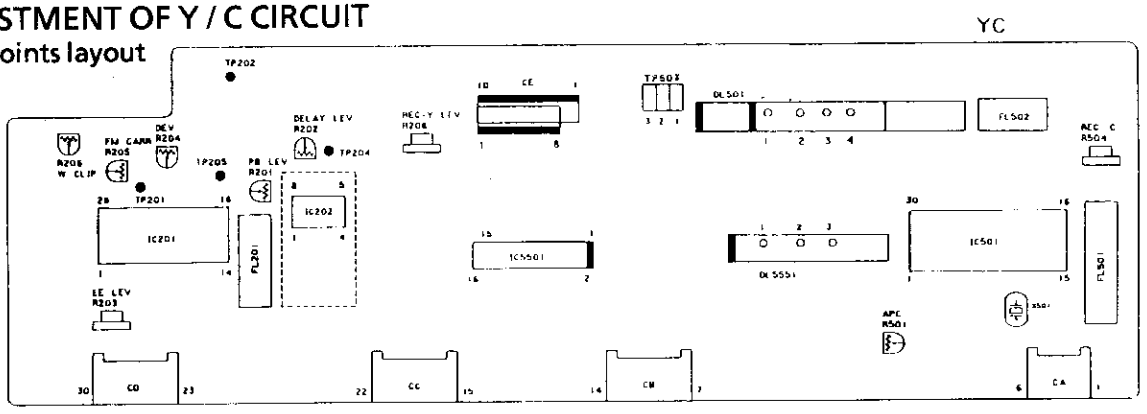


Figure 2-4. Y/C PWB

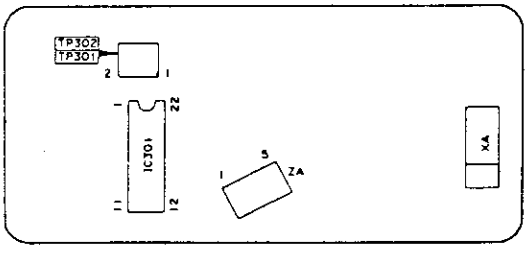


Figure 2-5. HEAD AMP PWB

Adjustment of EE level

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	Standard colour bar (stair-case waveform)
Test point	Pin ⑨ of IC201
Adjusting point	R203(EE level control)
Specification	2.0 ± 0.1Vp-p

1. Set the unit in record mode.
2. Feed the colour bar signal to the pin ⑨ of IC201. Observe the voltage across the terminal resistor of the pin 9 of IC201 on the oscilloscope screen, adjust R203 (EE level control) to obtain the value indicated in Figure 2-6.

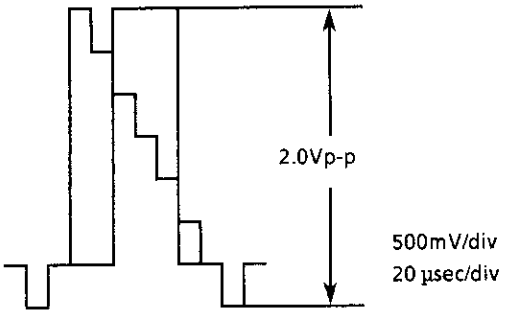


Figure 2-6.

Adjustment of white clip

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	Standard colour bar (stair-case waveform)
Test point	TP201
Adjusting point	R206 (white clip control)
Specification	80 ± 4%

1. Place the unit to the record mode.
2. Feed the colour bar signal.
3. Turn R205 clockwise to maximum position.
4. Observing the output at TP201, adjust R206 (white clip control) so that the white peak overshoot be 80 ± 4%.
5. Make sure that the dark peak overshoot is 50 ± 10%

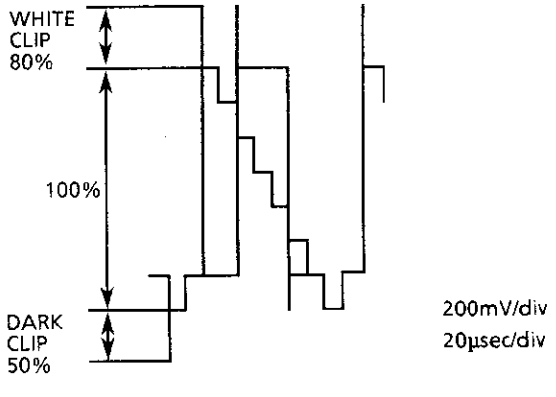


Figure 2-7.

Adjustment of FM 3.8MHz and 4.8MHz

Measuring instrument	Frequency counter	Oscilloscope
Mode	Recording	Self-recording / playback
Input signal	External input (no signal)	Standard colour bar (stair-case waveform)
Test point	TP301 (Signal) TP302 (Ground)	Video output terminal
Adjusting point	R205 (FM carrier control)	R204 (Deviation control)
Specification	3.8 MHz ± 50KHz	1.0 ± 0.04 Vp-p

Note.1:
Carry out this adjustment only when IC201 has been replaced or when the carrier setting(3.8MHz) or the deviation(4.8MHz) is found apparently out of specification.
Make this adjustment after the EE level has been completely adjusted.

Note.2:
The video output terminal should be terminated with a 75-ohm impedance.

1. First make sure that the EE video signal level is at the specified level.
2. Place the unit in the record mode and get it ready for external input.
   Note:
   Do not connect anything to the external input terminal.
3. Hook up the frequency counter to TP301 and TP302. Adjust R205(FM carrier control) so that the counter reading be 3.8MHz.
   Note:
   Make sure the white clip control is not now applied to the waveform.
4. Feed the colour bar signal and make self-recording and playback.
5. Observe the video output terminal voltage (across the terminal resistor) on the oscilloscope screen. If the playback video signal level is above 1.0Vp-p, turn R204(deviation control) clockwise.
   If below 1.0Vp-p, turn the control counter-clockwise. Now make self-recording and playback again.
6. Repeat the above step5 to finally get the playback video signal level at 1.0 ± 0.04Vp-p, as shown in Figure-2-8.

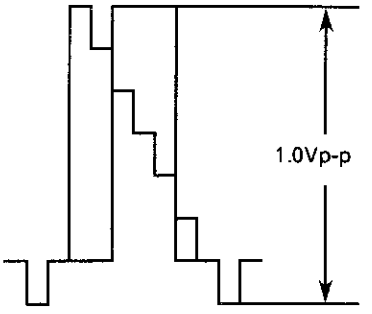


Figure 2-8.

Adjustment of recording current

Measuring instrument		Oscilloscope
Mode		Recording
Input signal		Standard colour bar (stair-case waveform)
Test signal		TP301 (GND at TP302) External trigger (video output terminal)
Adjusting point	R208 (recording Y control)	R504 (recording chroma control)
Specification	Sync tip level 140 ± 10mVp-p	Red level 28 ± 2mVp-p

Note:
TP301 and TP302 are located on the head amp PWB.
* Hot side of external trigger: VIDEO OUT
* Grounding of external trigger:
  Direct from GND of VIDEO OUT terminal

1. Place the unit to the record mode.
2. Feed the colour bar signal.
3. Observing the waveform on the oscilloscope screen(external trigger at video output terminal), take the following steps.
   a) Connect the oscilloscope's ground and signal leads to TP302 and TP301, respectively.
   b) Turn R208 (recording Y control) to minimum.
   c) Adjust R504(recording chroma control) so that the red level be 28 ± 2mVp-p as shown in Figure2-9.
4. Adjust R208 (recording Y control) so that the sync tip be 140 ± 10mVp-p as shown in Figure2-10.

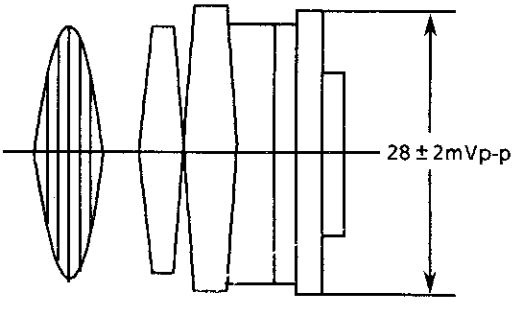


Figure 2-9.

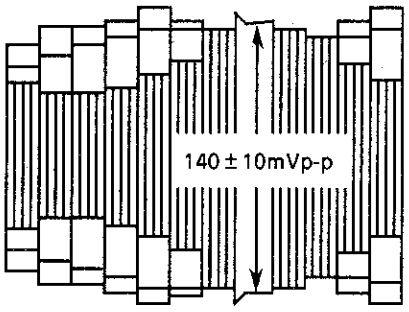


Figure 2-10.

■ ADJUSTMENT OF Y/C PLAYBACK CIRCUIT

Adjustment of playback video signal level

Measuring instrument	Oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	Pin ⑨ of IC201
Adjusting point	R201 (playback level control)
Specification	2.0 ± 0.1Vp-p

1. Insert the alignment tape and place the unit to the playback mode.
2. Hook up the oscilloscope pin ⑨ of IC201. Adjust R201(playback level control) so that the on-screen waveform be 2.0 ± 0.1Vp-p as shown in Figure2-11.

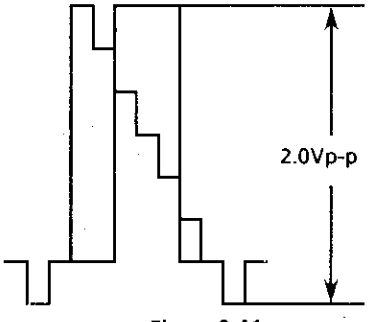


Figure 2-11.

Adjustment of delay level

Measuring instrument	Dual-beam oscilloscope
Mode	Playback
Tape used	Alignment tape (VROCPSV) (stair-case waveform)
Test point	CH-1; TP204 CH-2; TP205
Adjusting point	R202 (delay level control)
Specification	CH-2 level = CH-1 level

1. Insert the alignment tape and play it.
2. Adjust R202(delay level control) so that the levels for CH-1 and CH-2 are the same as shown in Figure2-12.

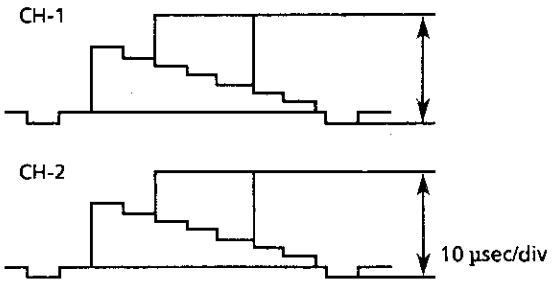


Figure 2-12.

Adjustment of the APC

Measuring instrument	Frequency counter
Mode	Playback
Tape used	Alignment tape (VROCPSV)
Test point	Pin ⑪ of connector CB
Adjusting point	R501 (APC control)
Specification	4.433619MHz ± 50Hz

1. Insert the alignment tape (VROCPSV) and place the unit to the playback mode.
2. Connect the frequency counter to pin ⑪ of connector CB. Adjust R501 (APC control) so that the counter reading be 4.433619MHz ± 50Hz.

■ ADJUSTMENT OF HiFi AND LINEAR AUDIO

Note: The controls and specification figures in brackets [ ] are for the right channel.

Adjustment of EE level

Measuring instrument	VTVM
Mode	EE
Input signal	*1; 1 kHz / - 5 dB (RCA type connector) *2; 1 kHz / - 3.8 dB (21-pin type connector)
Test point	Audio output terminal
Adjusting point	R6359 [R6353] (EE level control)
Specification	*1; - 5 ± 3 dB (RCA type connector) *2; - 3.8 ± 3 dB (21-pin type connector)

(R6359 and R6353 are located on the HiFi PWB.)

MC-Service

1. Set the input switch to EXT. position.
2. Feed the input signal through the audio line input terminal.
3. Connect the VTVM's CH1 to the left jack of the audio line output terminal, and its CH2 to the right jack. Adjust R6359 [R6353] so that the VTVM should read the specification.

Adjustment of carrier frequency

Measuring instrument	Frequency counter
Mode	EE
Input signal	No signal
Test point	C6372 terminal lead at R6370 (L channel) C6366 terminal lead at R6366 (R channel)
Adjusting point	R6374 [R6365] (L[R] - channel frequency (fo) control)
Specification	1.4 MHz ± 5 kHz [1.8 MHz ± 5 kHz]

(R6374 and R6365 are located on the HiFi PWB.)

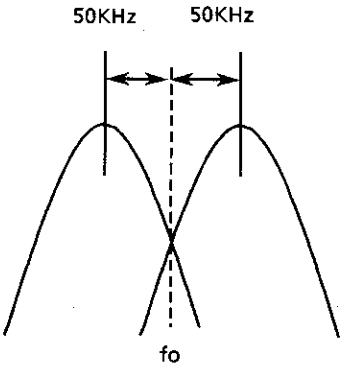
1. Set the input switch to EXT. position. But feed no signal.
2. Connect the frequency counter to the test point.
3. Adjust R6374 [R6365] so that the frequency counter should read the specification.

Adjustment of deviation
(using a spectrum analyzer)

Measuring instrument	Spectrum analyzer
Mode	EE
Input signal	*1; 1 kHz / - 5 dB (RCA type connector) *2; 1 kHz / - 3.8 dB (21-pin type connector)
Test point	TP6307, shielded casing (GND)
Adjusting point	R6363 [R6357] (deviation control)
Specification	50 ± 5 kHz

(R6363 and R6357 are located on the HiFi PWB.)

1. Feed the input signal through the audio line input terminal.
2. Connect the spectrum analyzer to TP6307 (HiFi PWB) and the shielded casing (GND). Observing the spectrum analyzer screen, adjust R6363 [R6357] so that the 50 ± 5 kHz range should be ensured. (Figure 2-13)



fo = 1.4MHz (left channel)
fo = 1.8MHz (right channel)

Figure 2-13.

Adjustment of deviation
(using a frequency counter and VTVM)

Measuring instrument	Frequency counter, VTVM
Mode	Self - recording / playback
Input signal	*1; 1 kHz/-5 dB (RCA type connector) *2; 1 kHz/-3.8 dB (21-pin type connector)
Test point	Audio output terminal
Adjusting point	R6363[R6357] (Recording level control)
Specification	*1; -5 ± 3 dB (RCA type connector) *2; -3.8 ± 3 dB (21-pin type connector)

(R6363 and R6357 are located on the HiFi PWB.)

1. Play back the standard HiFi tape (VROCBFFS) and make sure that the playback level is -5 ± 1 dB.
2. Referring back to Item 2 (Carrier frequency adjustment), be sure that the carrier frequency is 1.4 MHz ± 5 kHz [1.8 MHz ± 5 kHz].
3. Feed the input signal through the audio line input terminal.
4. Turn R6363 [R6357] clockwise if the self-recording/playback level and the playback level are lower than specified. Turn it counterclockwise if the levels are higher than specified. Now make recording and playback again.
5. Repeat the above step 4 until the playback level becomes as specified.

Adjustment of band-pass filter frequency (fo)

Measuring instrument	Spectrum analyzer
Mode	playback
Input signal	Tracking signal by spectrum analyzer
Test point	TP6601 (SIG), TP6602 (GND)
Adjusting point	R6367 (Band-pass filter frequency control)
Specification	f_0 = 1.6 MHz ± 50 kHz

(R6367 is located on the HiFi PWB.)

1. First disconnect the connector BE.
2. Feed the tracking signal (35 mVp-p) from the spectrum analyzer to pins ④ and ⑨ of the IC6304.
3. Connect the spectrum analyzer to TP6601 (SIG.), and TP6602 (GND).
4. Feed a 5-volt signal to TP6603 from outside, and then ground this test point, to see if the following is ensured.

TP6603 at 5V:	Output at TP6601 to be 1.4 MHz
TP6603 ground:	Output at TP6601 to be 1.8 MHz

5. Switch on and off the signal to TP6603. Adjust R6367 so that the point (f_0) where the 1.4-MHz wave and the 1.8MHz wave cross each other should be 1.6 MHz. See Figure 2-14 below.

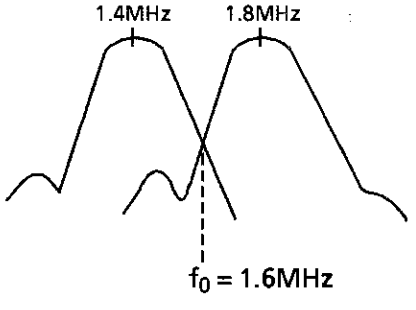


Figure 2-14.

Adjustment of drop-out

Measuring instrument	Digital voltmeter
Mode	playback
Input signal	Standard HiFi tape (VROCBFFS)
Test point	TP6308, shielded casing (GND)
Adjusting point	R6371 (Drop-out level control)
Specification	2.6 ± 0.05 V

(R6371 is located on the HiFi PWB.)

1. Play back the standard HiFi tape (VROCBFFS).
2. Connect the digital voltmeter to TP6308 and the shielded casing (GND). Adjust R6371 (drop-out level control) to achieve the specification of 2.6 ± 0.05 V.

Checking of playback switching point

Measuring instrument	Oscilloscope
Mode	Standard HiFi tape (VROCBFFS)
Input signal	———
Test point	TP6302, TP703
Adjusting point	———
Specification	Longer than 100 µsec.

1. Connect the oscilloscope's CH1 to TP6302 and its CH2 to TP703. Connect the external trigger to TP7001 (control PWB).
2. Play back the standard HiFi tape (VROCBFFS). Externally trigger the circuitry. Observe the output at TP6302 and TP703 at the same time on the oscilloscope screen.
3. Make sure that the envelope at TP6302 is longer than 100µsec. ahead of the leading edge, and behind the trailing edge, of the output at TP703.

Notes:

1. Before making this adjustment, make sure that the video playback switching point has been accurately adjusted. Be sure to make this adjustment when this switching point has been adjusted.
   If the measurement is out of specification, readjust the playback switching point to the 6.5-0.5H range.
2. Make this adjustment just after the A/C head height and azimuth have been adjusted. It is acceptable that the envelope is longer than 100µsec. ahead of the leading edge of the head switching pulse signal at TP703.

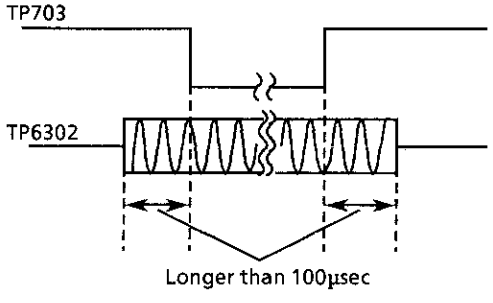


Figure 2-15.

Adjustment of level meter

Measuring instrument	Level meter
Mode	EE
Input signal	*1; 1 kHz / - 5 dB (RCA type connector) *2; 1 kHz / -3.8 dB (21-pin type connector)
Test point	Level meter
Adjusting point	R5018 [R5019]
Specification	0 dB

(R5018 and R5019 are located on the timer PWB.)

1. Feed the input signal through the audio line input terminal.
2. Set the audio input selector to EXT. position.
3. Set the audio output selector to STEREO position.
4. Adjust R5018 [R5019] so that the level meter lights up to the 0-dB level.
5. Next receive a monaural broadcast signal. Adjust R5019 so that the left-channel and right-channel level meters light up to the same level.

■ ADJUSTMENT OF AUDIO CIRCUIT

Adjustment of playback level

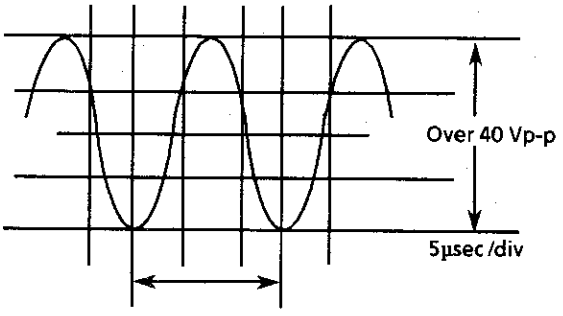
Measuring instrument	VTVM
Mode	Playback
Input signal	Alignment tape (VROCPSV) (1KHz level control signal)
Test point	Audio output terminal
Adjusting point	R6328 (playback level control)
Specification	*1; -9 ± 1dBs (RCA tape connector) *2; -7 ± 1dBs (21pin type connector)

1. Playback the alignment tape (1KHz level control signal).
2. Hook up the VTVM to the audio output terminal.
3. Adjust R6328 (playback level control) so that the output level be specified.

Checking of Erase voltage and oscillation frequency

Measuring instrument	Oscilloscope
Mode	Recording
Input signal	————
Test point	Both ends of the full-erase head
Adjusting point	————
Specification	Erase voltage; Over40Vp-p Oscillation frequency; 70 ± 5KHz

1. Place the unit to the record mode.
2. Hook up the oscilloscope to both ends of the full-erase head.
3. Make sure that the oscillation frequency is 70 ± 5KHz.



65kHz to 75kHz about three divisions

Figure 2-16.

Adjustment of bias current

Measuring instrument	VTVM
Mode	Recording
Input signal	————
Test point	TP6303 (SIG), TP6304 (GND)
Adjusting point	R6305 (REC Bias control)
Specification	260 ± 10μA

1. Place the unit to the record mode.
2. Connect the VTVM to TP6303 (Signal) and TP6304 (Ground).
3. Adjust R6305 (REC Bias control) so that the bias current be 260 ± 10μA (2.6 ± 0.1mV).

Checking of recording level

Measuring instrument	VTVM
Mode	Self-recording/playback
Input signal	*1; 1 kHz / -5 dBs (RCA type connector) *2; 1 kHz / -3.8 dBs (21pin type connector)
Test point	Audio output terminal
Control	————
Specification	*1; -5 ± 3dBs (RCA type connector) *2; -3.8 ± 3dBs (21pin type connector)

MC-Service

1. Feed input signal to the audio input terminal. Make self-recording and playback of the signal.
2. Make sure the output at the audio output terminal is specified.
3. If out of spec, readjust the playback level and the bias current.

Note:

*1 RCA type connector	N, W, D, K, NZ, X, E, DP, NP, WP, AP, XP, EP, KP, MP
*2 21pin type connector	S, RM, QM, HM, Y, G, H

- Test points layout

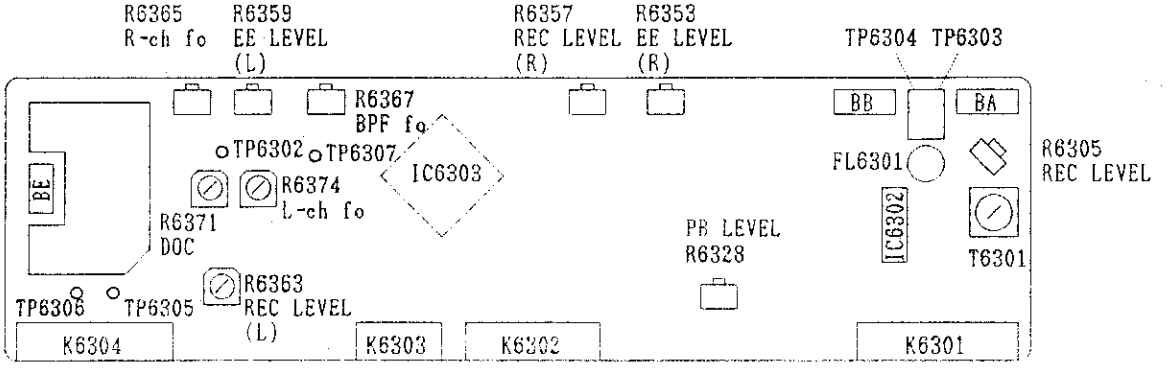


Figure 2-17. HiFi PWB

■ ADJUSTMENT OF THE IF CIRCUIT

Adjustment of the RF AGC

Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	Colour bar signal
Test point	TP1551 (GND) TP1552 (Video output)
Adjusting point	VR001 (AGC control)

1. Receive the colour bar signal (input field strength:80dBμ).
2. Observe the video output terminal waveform on the oscilloscope.
   Adjust VR001 (AGC control) in the IF pack until the noise disappers from the oscilloscope screen and the waveform nearly comes into sync.

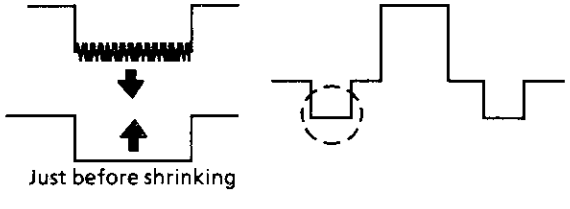


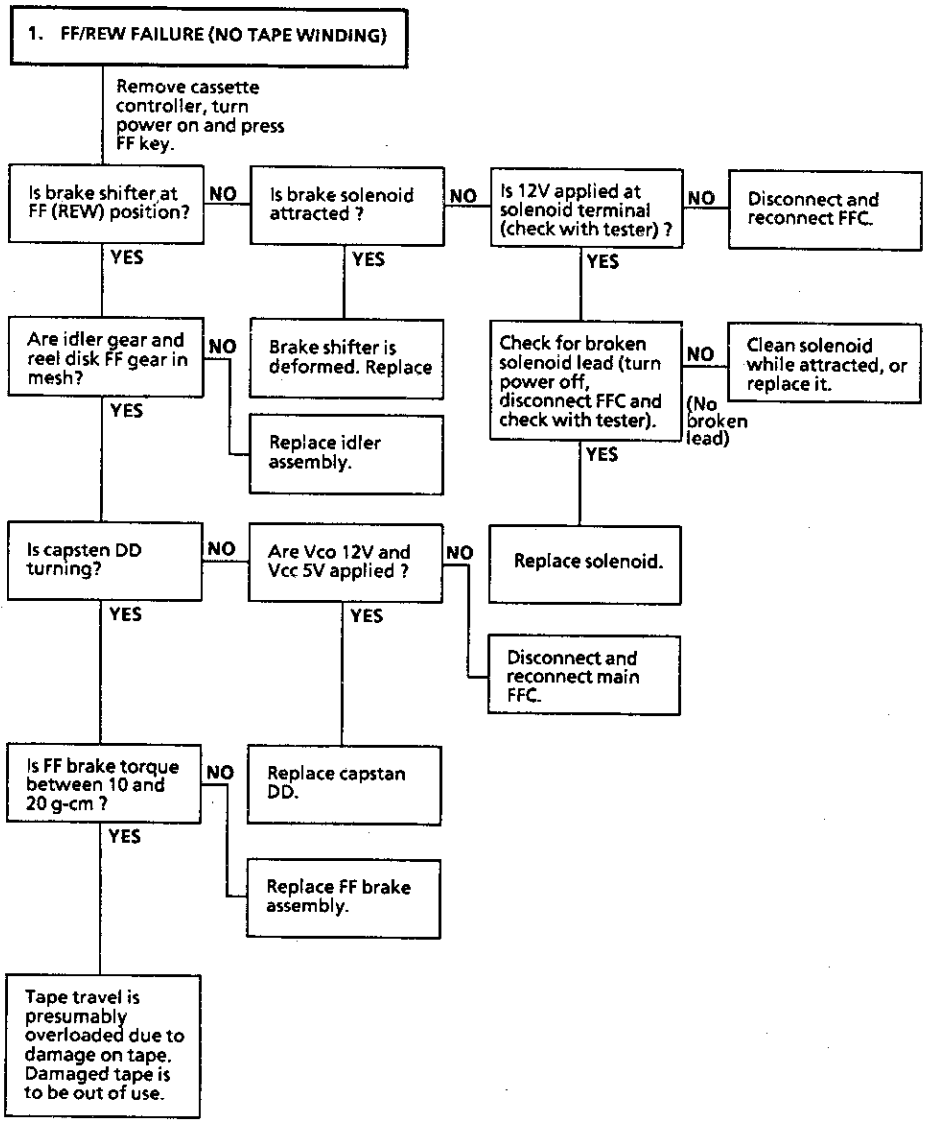
Figure 2-18.

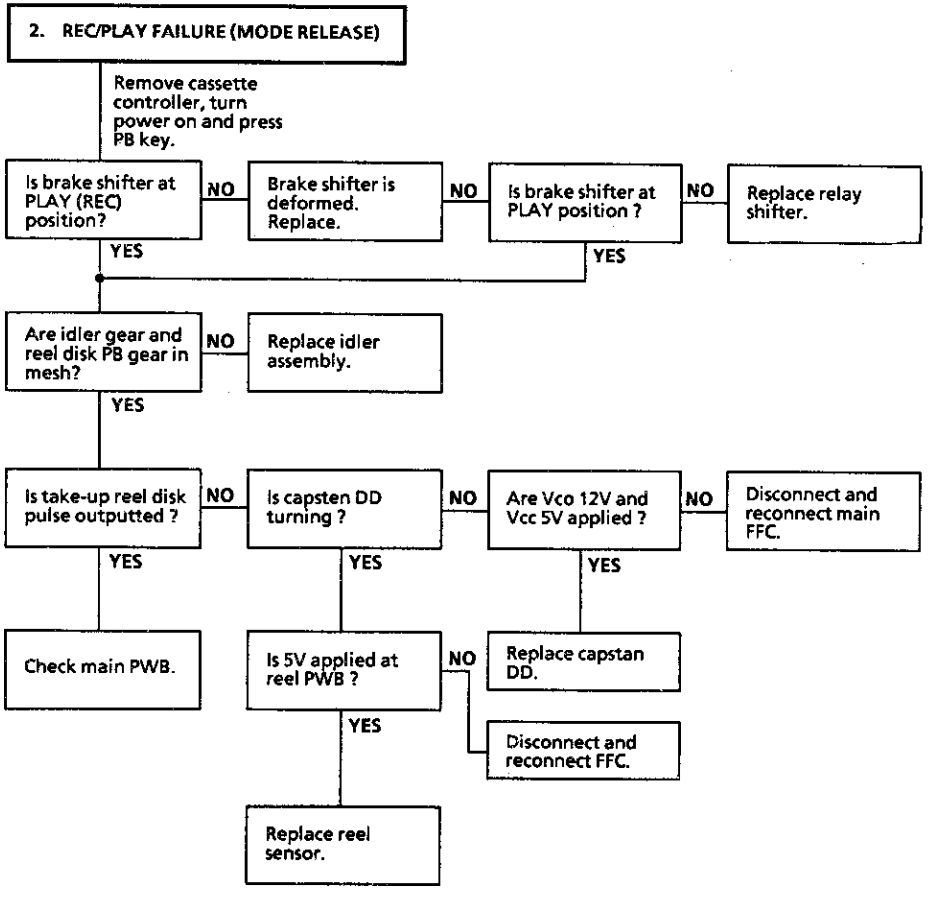
Adjustment of the AFT

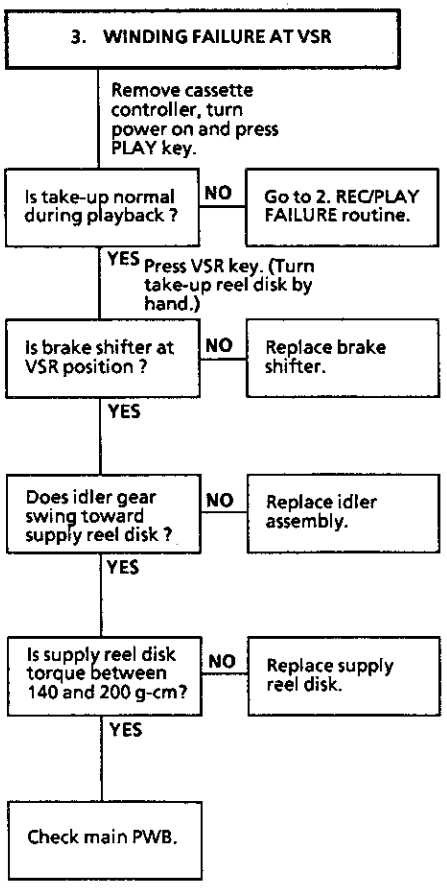
Measuring instrument	Oscilloscope Signal generator
Mode	EE
Input signal	PIF frequency uniwave Colour bar signal (70dbμ)
Test point	TP1551 (GND) TP1552 (Video output)
Adjusting point	T002 (AFT coil)
Specification	————

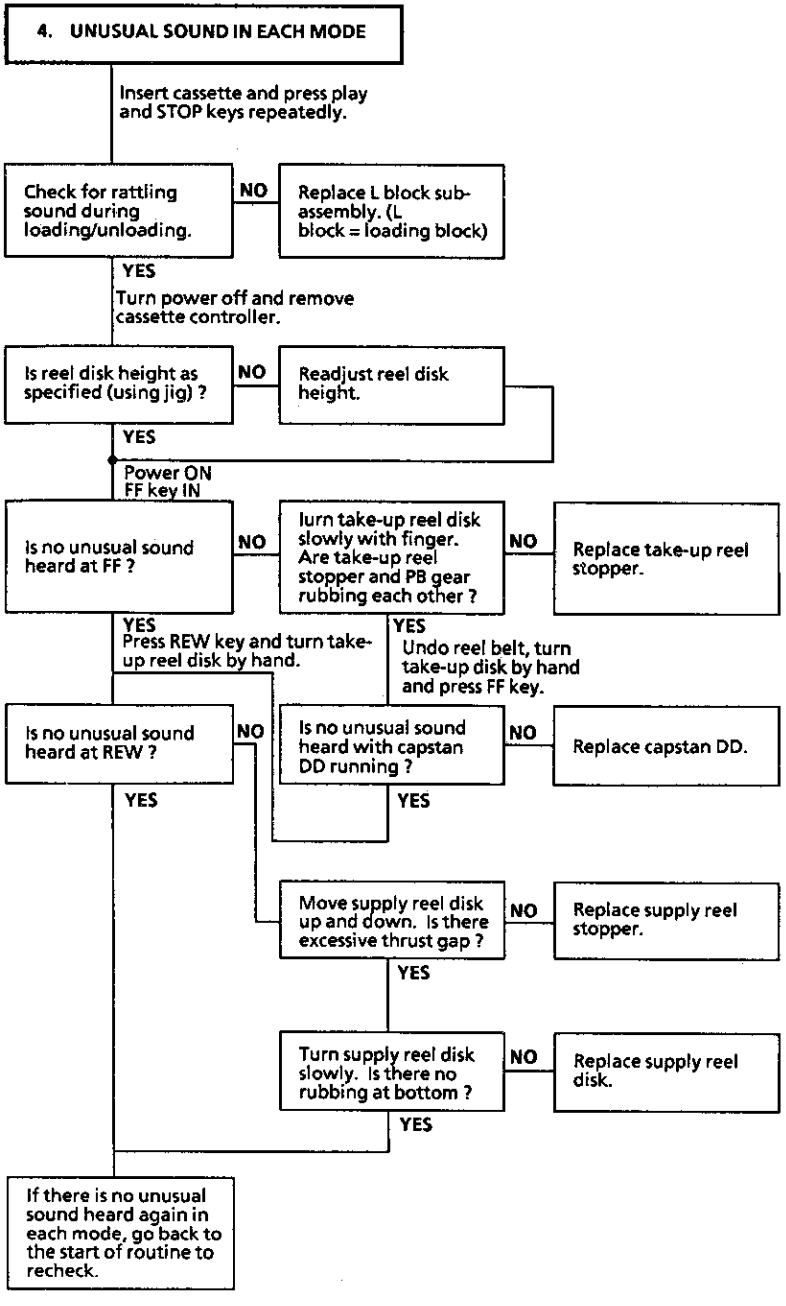
1. Receive the colour bar signal(input field strength:70dbμ).
2. Using the signal generator, feed the PIF frequency (39.5MHz) signal (sin wave) to the tuner IF out put terminal.
3. Set the tuning switch to the VHF or UHF position. Keep the tuning button (+) or (−) depressed until the beating on the oscilloscope screen be minimum.
4. Set the tuning switch on the normal position. Adjust the T002(AFT coil) so that beating on the oscilloscope screen be minimum.

MECHANISM TROUBLESHOOTING


1. FF/REW FAILURE (NO TAPE WINDING)
Remove cassette controller, turn power on and press FF key.
Is brake shifter at FF (REW) position?
NO
Is brake solenoid attracted ?
NO
Is 12V applied at solenoid terminal (check with tester) ?
NO
Disconnect and reconnect FFC.
YES
YES
YES
Are idler gear and reel disk FF gear in mesh?
NO
Brake shifter is deformed. Replace
Check for broken solenoid lead (turn power off, disconnect FFC and check with tester).
NO
Clean solenoid while attracted, or replace it.
(No broken lead)
YES
Replace idler assembly.
YES
Is capsten DD turning?
NO
Are Vco 12V and Vcc 5V applied ?
NO
Replace solenoid.
YES
YES
Disconnect and reconnect main FFC.
Is FF brake torque between 10 and 20 g-cm ?
NO
Replace capstan DD.
YES
Replace FF brake assembly.
Tape travel is presumably overloaded due to damage on tape. Damaged tape is to be out of use.

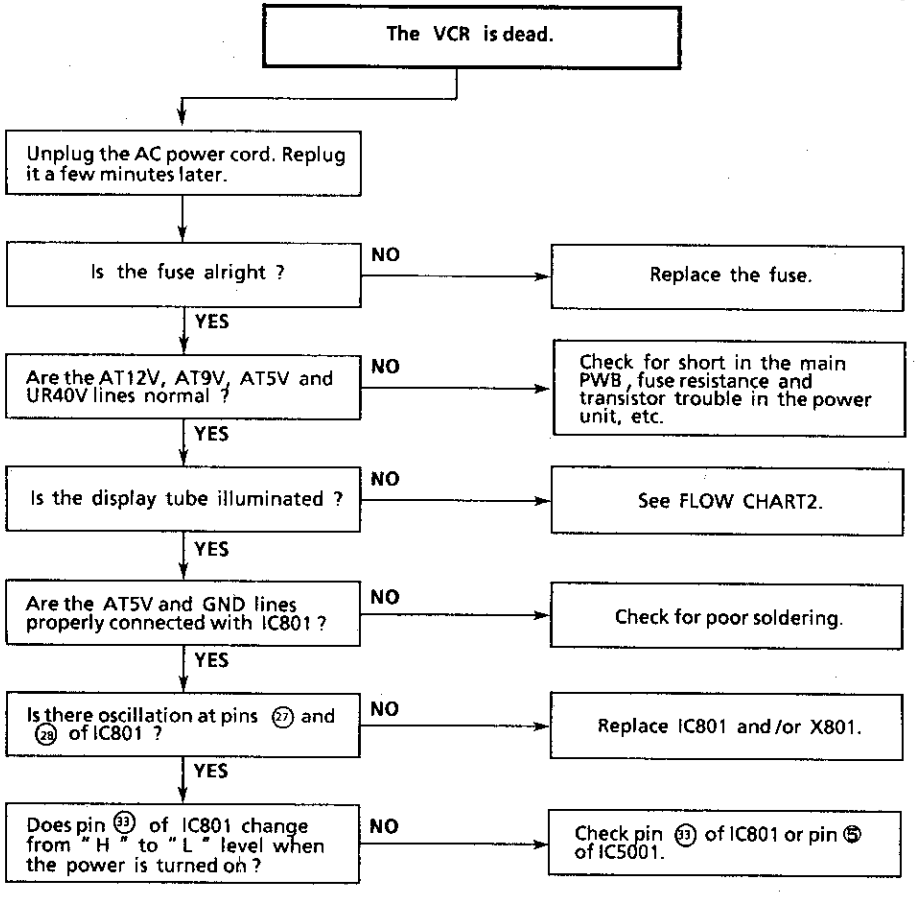



3. WINDING FAILURE AT VSR
Remove cassette controller, turn power on and press PLAY key.
Is take-up normal during playback ?
NO
Go to 2. REC/PLAY FAILURE routine.
YES
Press VSR key. (Turn take-up reel disk by hand.)
Is brake shifter at VSR position ?
NO
Replace brake shifter.
YES
Does idler gear swing toward supply reel disk ?
NO
Replace idler assembly.
YES
Is supply reel disk torque between 140 and 200 g-cm?
NO
Replace supply reel disk.
YES
Check main PWB.


4. UNUSUAL SOUND IN EACH MODE
Insert cassette and press play and STOP keys repeatedly.
Check for rattling sound during loading/unloading.
NO
Replace L block sub-assembly. (L block = loading block)
YES
Turn power off and remove cassette controller.
Is reel disk height as specified (using jig) ?
NO
Readjust reel disk height.
YES
Power ON
FF key IN
Is no unusual sound heard at FF ?
NO
Turn take-up reel disk slowly with finger. Are take-up reel stopper and PB gear rubbing each other ?
NO
Replace take-up reel stopper.
YES
Press REW key and turn take-up reel disk by hand.
YES
Undo reel belt, turn take-up disk by hand and press FF key.
Is no unusual sound heard at REW ?
NO
Is no unusual sound heard with capstan DD running ?
NO
Replace capstan DD.
YES
YES
Move supply reel disk up and down. Is there excessive thrust gap ?
NO
Replace supply reel stopper.
YES
Turn supply reel disk slowly. Is there no rubbing at bottom ?
NO
Replace supply reel disk.
YES
If there is no unusual sound heard again in each mode, go back to the start of routine to recheck.

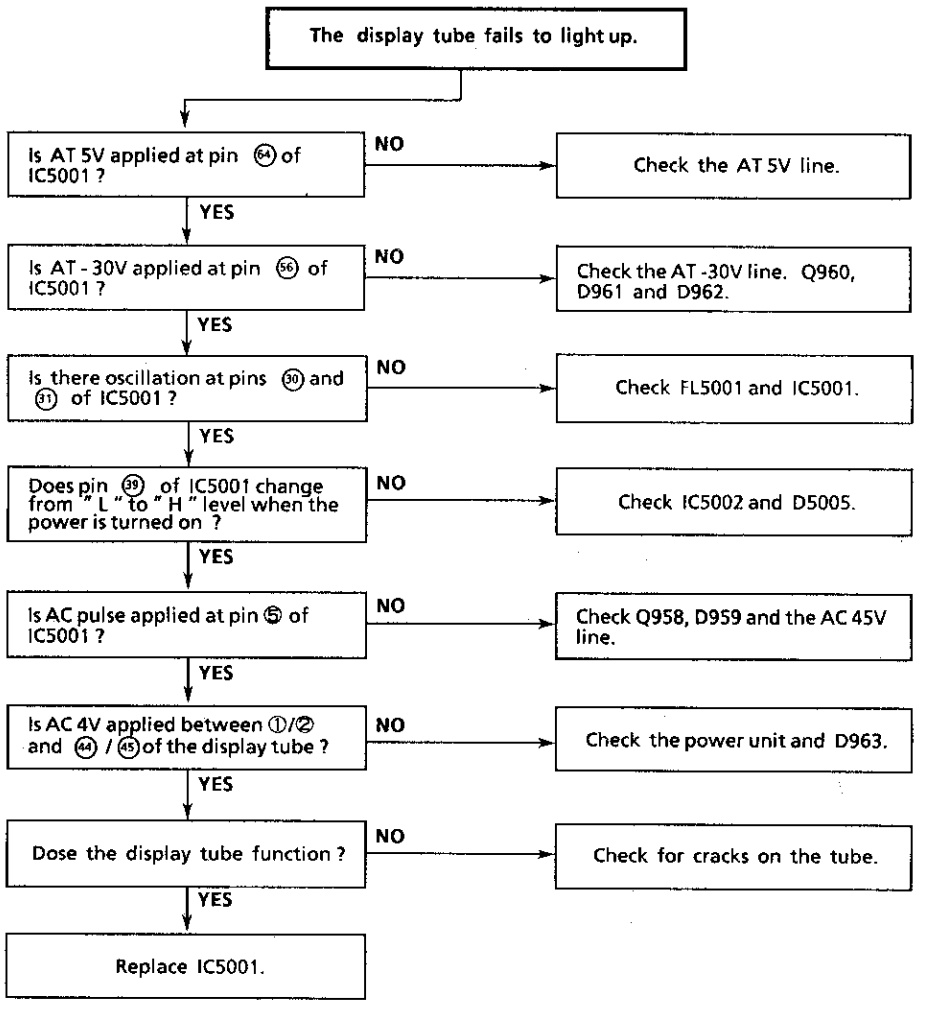
POWER TROUBLESHOOTING

FLOW CHART NO. 1


The VCR is dead.
Unplug the AC power cord. Replug it a few minutes later.
Is the fuse alright ?
NO
Replace the fuse.
YES
Are the AT12V, AT9V, AT5V and UR40V lines normal ?
NO
Check for short in the main PWB, fuse resistance and transistor trouble in the power unit, etc.
YES
Is the display tube illuminated ?
NO
See FLOW CHART2.
YES
Are the AT5V and GND lines properly connected with IC801 ?
NO
Check for poor soldering.
YES
Is there oscillation at pins ㉗ and ㉘ of IC801 ?
NO
Replace IC801 and/or X801.
YES
Does pin ㉝ of IC801 change from " H " to " L " level when the power is turned on ?
NO
Check pin ㉝ of IC801 or pin ⑮ of IC5001.

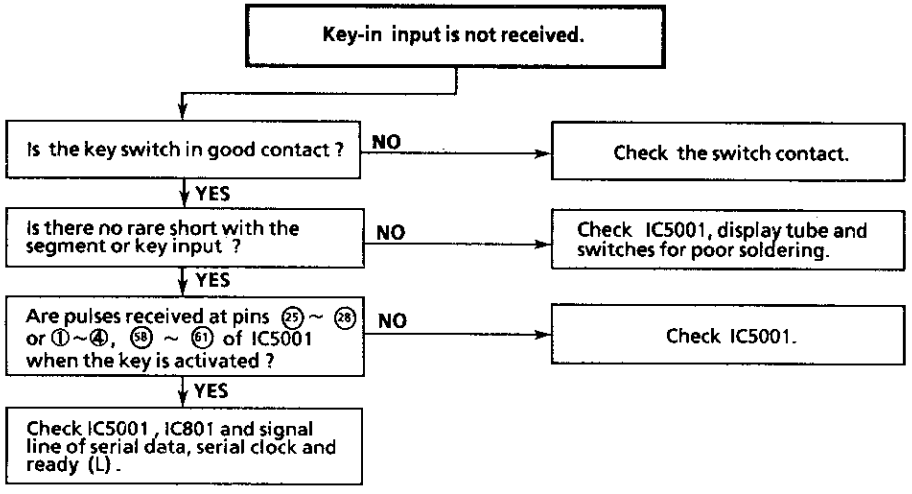
TIMER (1) TROUBLESHOOTING

FLOW CHART NO. 2


The display tube fails to light up.
Is AT 5V applied at pin ㊹ of IC5001 ?
NO
Check the AT 5V line.
YES
Is AT - 30V applied at pin ㊺ of IC5001 ?
NO
Check the AT -30V line. Q960, D961 and D962.
YES
Is there oscillation at pins ㉚ and ㉛ of IC5001 ?
NO
Check FL5001 and IC5001.
YES
Does pin ㊴ of IC5001 change from " L " to " H " level when the power is turned on ?
NO
Check IC5002 and D5005.
YES
Is AC pulse applied at pin ⑤ of IC5001 ?
NO
Check Q958, D959 and the AC 45V line.
YES
Is AC 4V applied between ①/② and ㊹ / ㊺ of the display tube ?
NO
Check the power unit and D963.
YES
Dose the display tube function ?
NO
Check for cracks on the tube.
YES
Replace IC5001.

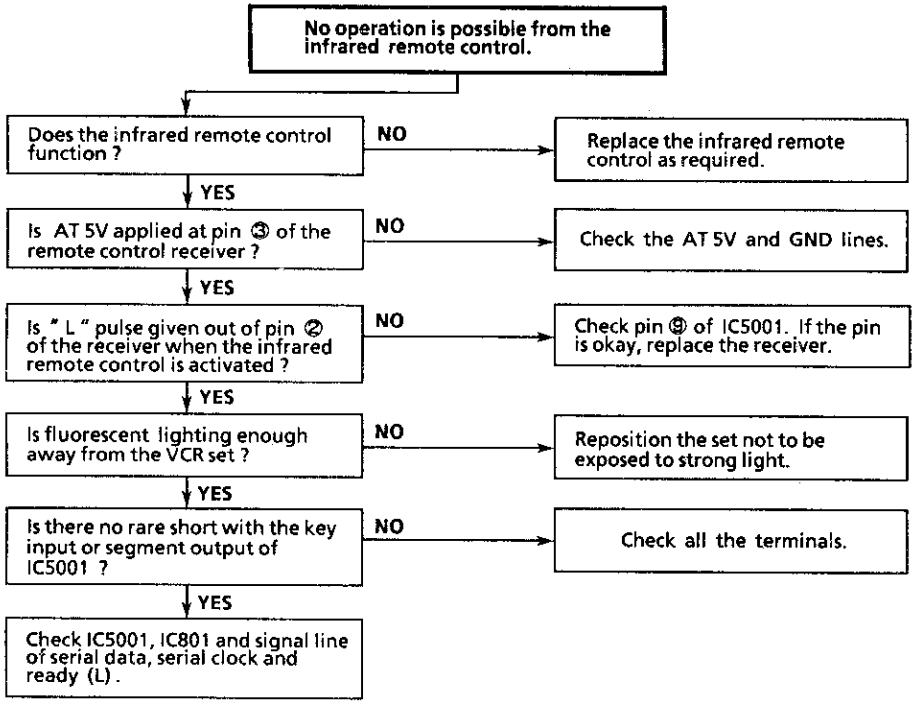
TIMER (2) TROUBLESHOOTING

FLOW CHART NO. 3


Key-in input is not received.
Is the key switch in good contact ?
NO
Check the switch contact.
YES
Is there no rare short with the segment or key input ?
NO
Check IC5001, display tube and switches for poor soldering.
YES
Are pulses received at pins ㉕~㉘ or ①~④, ㊽ ~ ㊶ of IC5001 when the key is activated ?
NO
Check IC5001.
YES
Check IC5001 , IC801 and signal line of serial data, serial clock and ready (L) .

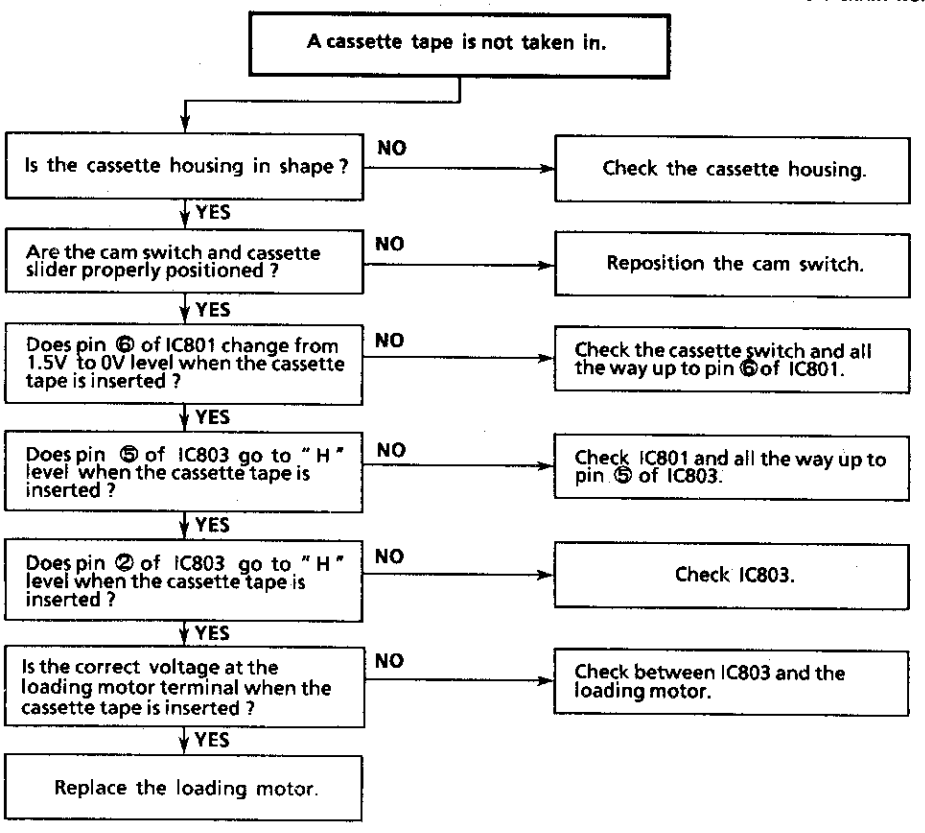
INFRARED R/C TROUBLESHOOTING

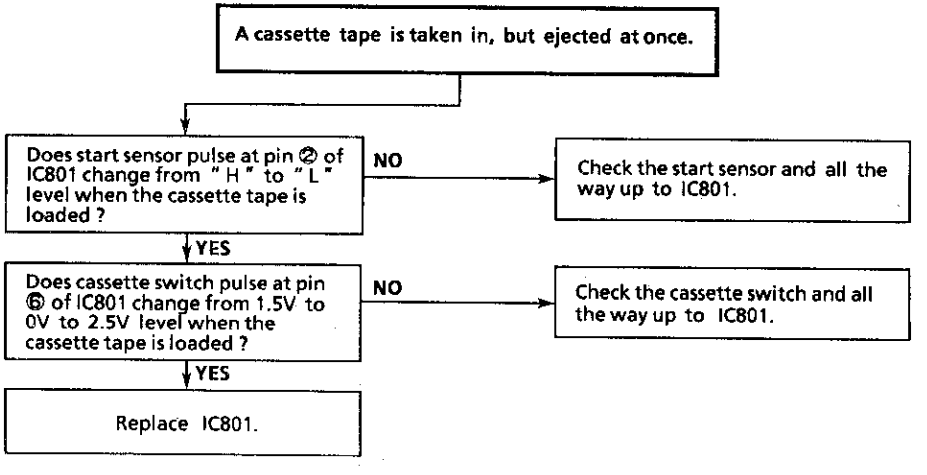
FLOW CHART NO. 4


No operation is possible from the infrared remote control.
Does the infrared remote control function ?
NO
Replace the infrared remote control as required.
YES
Is AT 5V applied at pin ③ of the remote control receiver ?
NO
Check the AT 5V and GND lines.
YES
Is " L " pulse given out of pin ② of the receiver when the infrared remote control is activated ?
NO
Check pin ⑨ of IC5001. If the pin is okay, replace the receiver.
YES
Is fluorescent lighting enough away from the VCR set ?
NO
Reposition the set not to be exposed to strong light.
YES
Is there no rare short with the key input or segment output of IC5001 ?
NO
Check all the terminals.
YES
Check IC5001, IC801 and signal line of serial data, serial clock and ready (L) .

CASSETTE CONTROL TROUBLESHOOTING

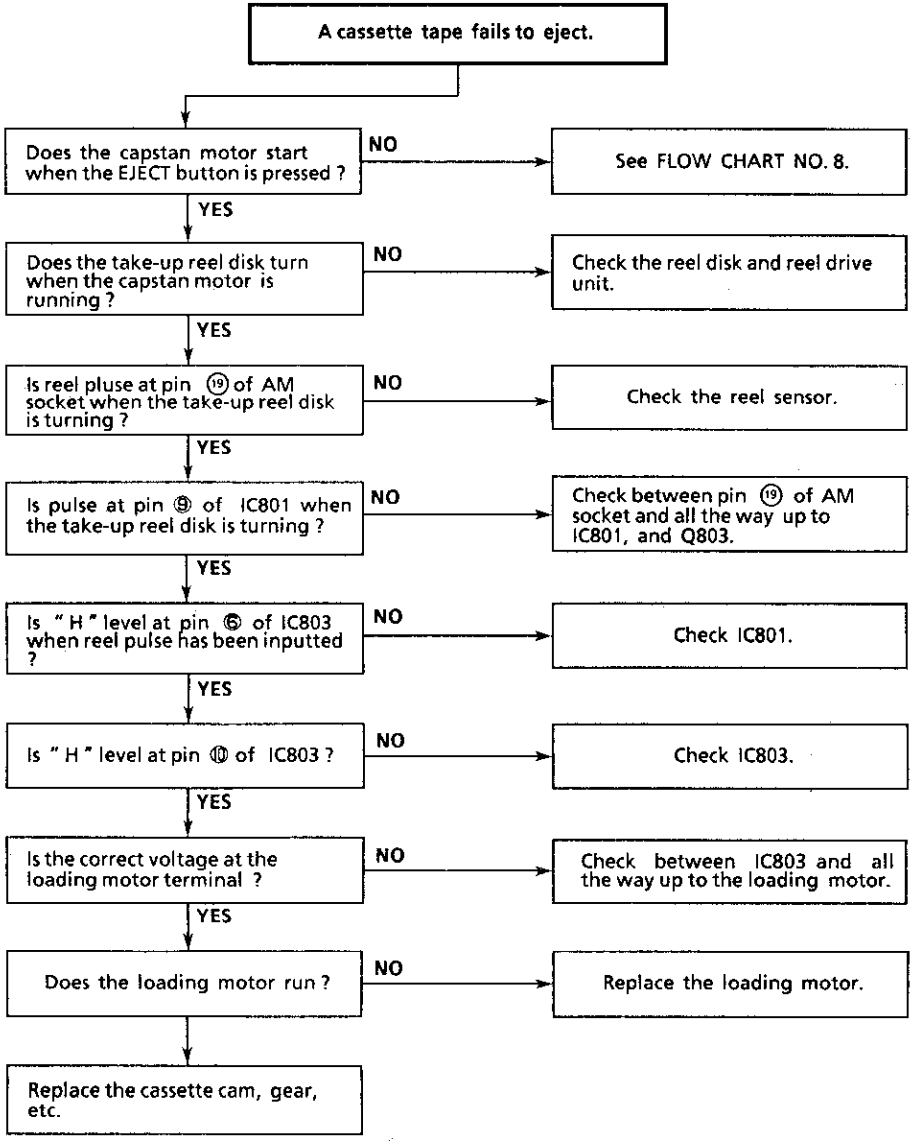
FLOW CHART NO. 5


A cassette tape is not taken in.
Is the cassette housing in shape ?
NO
Check the cassette housing.
YES
Are the cam switch and cassette slider properly positioned ?
NO
Reposition the cam switch.
YES
Does pin ⑥ of IC801 change from 1.5V to 0V level when the cassette tape is inserted ?
NO
Check the cassette switch and all the way up to pin ⑥ of IC801.
YES
Does pin ⑤ of IC803 go to " H " level when the cassette tape is inserted ?
NO
Check IC801 and all the way up to pin ⑤ of IC803.
YES
Does pin ② of IC803 go to " H " level when the cassette tape is inserted ?
NO
Check IC803.
YES
Is the correct voltage at the loading motor terminal when the cassette tape is inserted ?
NO
Check between IC803 and the loading motor.
YES
Replace the loading motor.


A cassette tape is taken in, but ejected at once.
Does start sensor pulse at pin ② of IC801 change from " H " to " L " level when the cassette tape is loaded ?
NO
Check the start sensor and all the way up to IC801.
YES
Does cassette switch pulse at pin ⑥ of IC801 change from 1.5V to 0V to 2.5V level when the cassette tape is loaded ?
NO
Check the cassette switch and all the way up to IC801.
YES
Replace IC801.

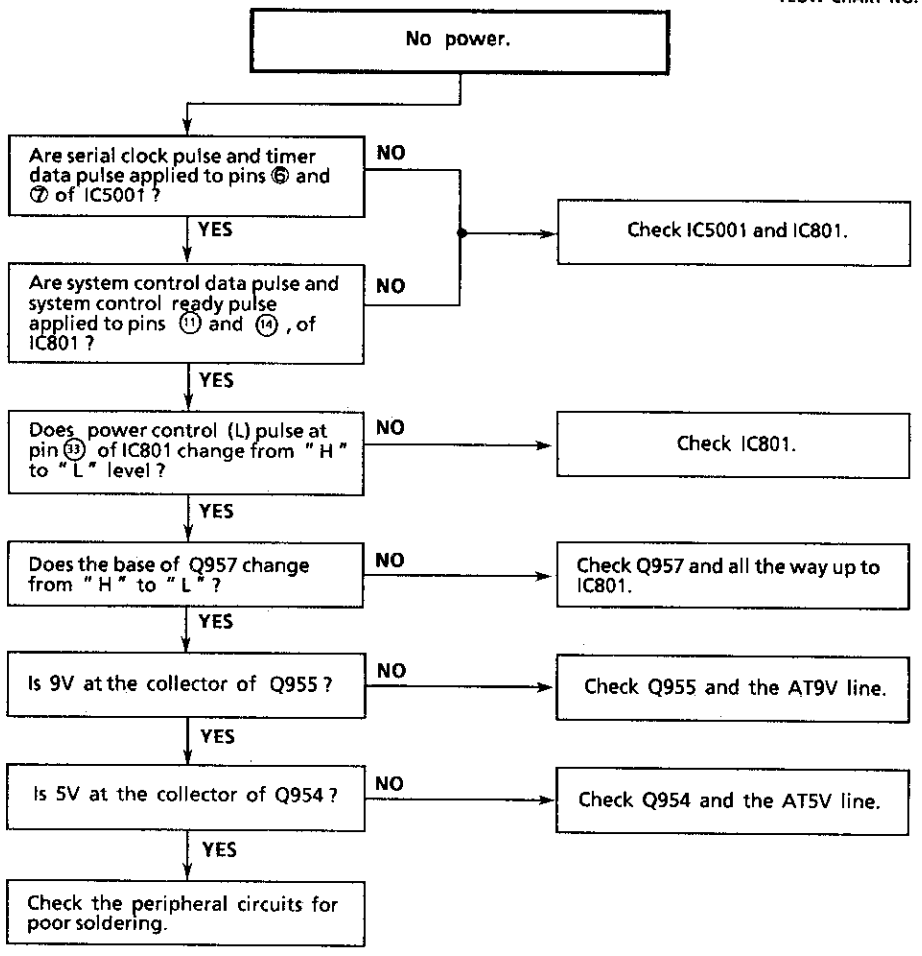
LOADING MOTOR AND EJECT TROUBLESHOOTING

FLOW CHART NO. 6


A cassette tape fails to eject.
Does the capstan motor start when the EJECT button is pressed ?
NO
See FLOW CHART NO. 8.
YES
Does the take-up reel disk turn when the capstan motor is running ?
NO
Check the reel disk and reel drive unit.
YES
Is reel pluse at pin ⑲ of AM socket when the take-up reel disk is turning ?
NO
Check the reel sensor.
YES
Is pulse at pin ⑨ of IC801 when the take-up reel disk is turning ?
NO
Check between pin ⑲ of AM socket and all the way up to IC801, and Q803.
YES
Is " H " level at pin ⑥ of IC803 when reel pulse has been inputted ?
NO
Check IC801.
YES
Is " H " level at pin ⑩ of IC803 ?
NO
Check IC803.
YES
Is the correct voltage at the loading motor terminal ?
NO
Check between IC803 and all the way up to the loading motor.
YES
Does the loading motor run ?
NO
Replace the loading motor.
Replace the cassette cam, gear, etc.

SYSTEM CONTROL TROUBLESHOOTING

FLOW CHART NO. 7


No power.
Are serial clock pulse and timer data pulse applied to pins ⑥ and ⑦ of IC5001 ?
NO
Check IC5001 and IC801.
YES
Are system control data pulse and system control ready pulse applied to pins ⑪ and ⑭ , of IC801 ?
NO
YES
Does power control (L) pulse at pin ㉝ of IC801 change from " H " to " L " level ?
NO
Check IC801.
YES
Does the base of Q957 change from " H " to " L " ?
NO
Check Q957 and all the way up to IC801.
YES
Is 9V at the collector of Q955 ?
NO
Check Q955 and the AT9V line.
YES
Is 5V at the collector of Q954 ?
NO
Check Q954 and the AT5V line.
YES
Check the peripheral circuits for poor soldering.

CAPSTAN MOTOR TROUBLESHOOTING

FLOW CHART NO. 8

The capstan motor fails to run.

- Is "H" pulse at pin ⑫ of IC701 ?
  - NO → Check IC701.
  - YES ↓
- Is PC5V at pin ① of MC socket ?
  - NO → Check the PC5V line.
  - YES ↓
- Is 2.5V at pin ④ of MC socket ?
  - NO → Check IC702 and all the way up to the 2.5V line of IC701.
  - YES ↓
- Is "H" pulse at pin ⑤ of MC socket ?
  - NO → Check between the MC socket and IC701, and between the MC socket and IC801.
  - YES ↓
- Is the voltage at pin ⑥ of MC 0.1 - 0.7V socket ?
  - NO → Check pins ㉙ , ㉚ and ㉔ of IC801.
  - YES ↓
- Is 12V at pin ⑦ of MC socket ?
  - NO → Check the M-12V line.
  - YES ↓

Replace the capstan motor.

DRUM MOTOR TROUBLESHOOTING

FLOW CHART NO. 9

The drum motor fails to run.

- Is "H" pulse at of pin ⑦ of IC701 ?
  - NO → Check IC701.
  - YES ↓
- Is "H" pulse at pin ⑥ of ME socket ?
  - NO → Check between the MC socket and IC701 and between the MC socket and IC801.
  - YES ↓
- Is AT12V at pin ③ of ME socket ?
  - NO → Check the M-12V line.
  - YES ↓

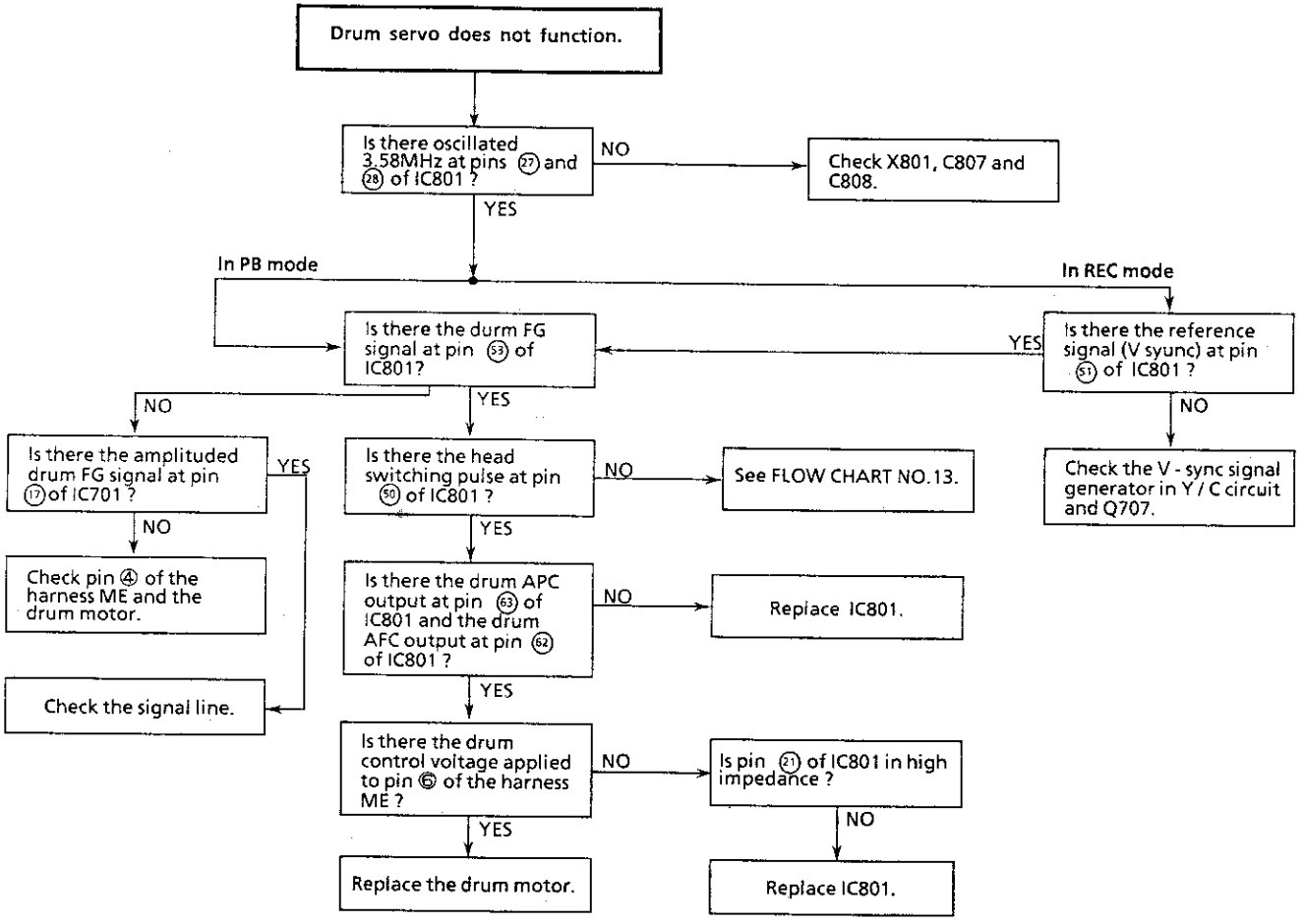
Replace the drum motor.

The drum motor runs only for a few seconds.

- Is drum PG signal at pin ① of ME socket ?
  - NO → Check the drum motor.
  - YES ↓
- Is drum PG signal at pin ㊷ of IC801 ?
  - NO → Check between the ME socket and all the way up to pin ㊷ of IC801.
  - YES ↓
- Is PG MM signal at pin ㊺ of IC801 ?
  - NO → Check IC801. Readjust R757 (PG MM control).
  - YES ↓
- Is H. SW. pulse at pin ㊿ of IC801 ?
  - NO → Check IC801.
  - YES ↓

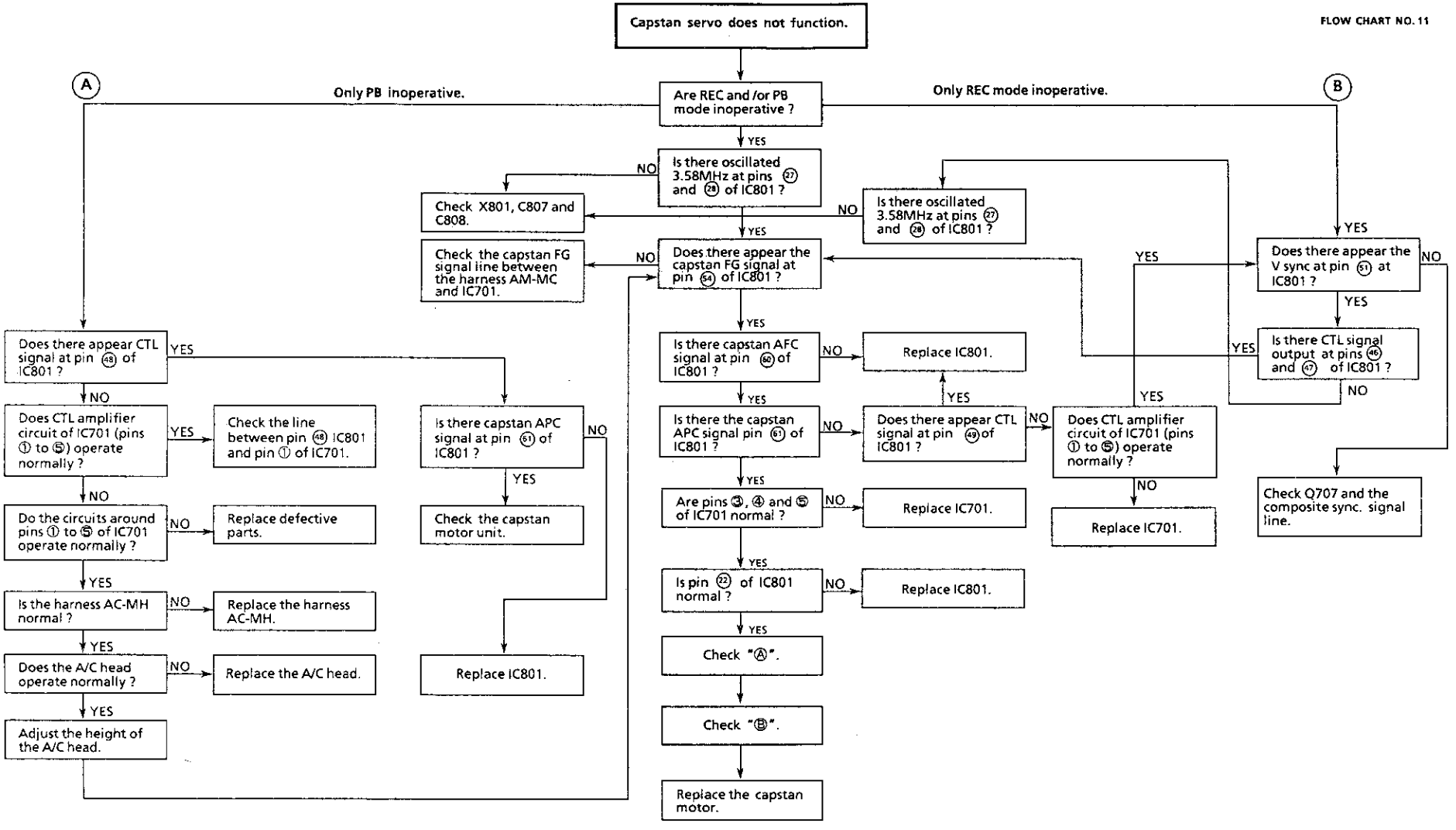
Replace IC801.

DRUM SERVO TROUBLESHOOTING


Drum servo does not function.
Is there oscillated 3.58MHz at pins (27) and (28) of IC801 ?
NO
Check X801, C807 and C808.
YES
In PB mode
In REC mode
Is there the durm FG signal at pin (53) of IC801?
YES
Is there the reference signal (V syunc) at pin (51) of IC801 ?
NO
NO
YES
Is there the amplituded drum FG signal at pin (17) of IC701 ?
YES
Is there the head switching pulse at pin (50) of IC801 ?
NO
See FLOW CHART NO.13.
Check the V - sync signal generator in Y / C circuit and Q707.
NO
YES
Check pin ④ of the harness ME and the drum motor.
Is there the drum APC output at pin (63) of IC801 and the drum AFC output at pin (62) of IC801 ?
NO
Replace IC801.
Check the signal line.
YES
Is there the drum control voltage applied to pin ⑥ of the harness ME ?
NO
Is pin (21) of IC801 in high impedance ?
YES
NO
Replace the drum motor.
Replace IC801.

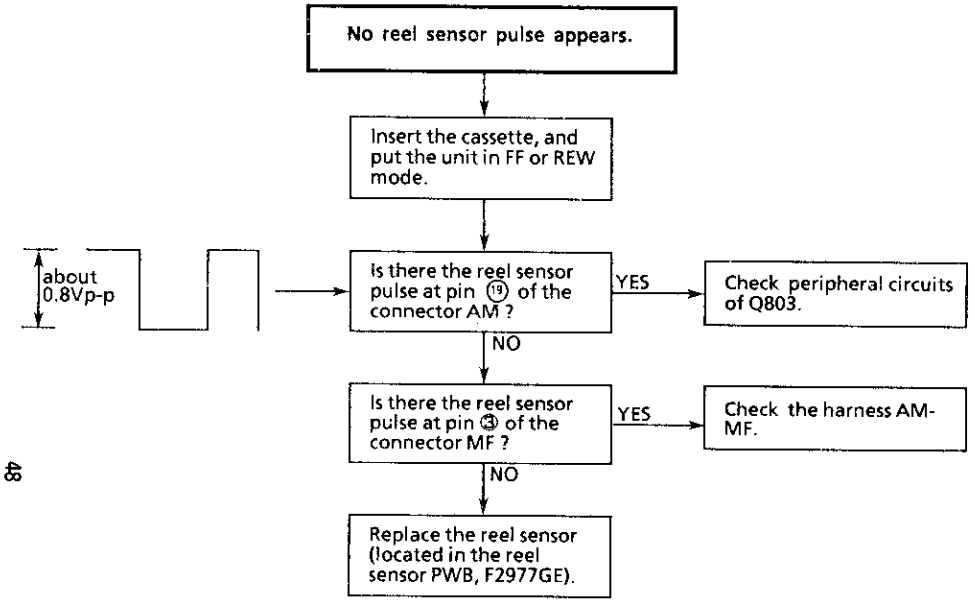
CAPSTAN SERVO TROUBLESHOOTING

FLOW CHART NO. 11


Capstan servo does not function.
Are REC and /or PB mode inoperative ?
Only PB inoperative.
Only REC mode inoperative.
A
B
YES
NO
Is there oscillated 3.58MHz at pins ㉗ and ㉘ of IC801 ?
Check X801, C807 and C808.
Is there oscillated 3.58MHz at pins ㉗ and ㉘ of IC801 ?
Does there appear the capstan FG signal at pin ㊹ of IC801 ?
Check the capstan FG signal line between the harness AM-MC and IC701.
Does there appear the V sync at pin ㊶ at IC801 ?
Is there CTL signal output at pins ㊻ and ㊼ of IC801 ?
Does there appear CTL signal at pin ㊽ of IC801 ?
Is there capstan AFC signal at pin ㊵ of IC801 ?
Replace IC801.
Is there the capstan APC signal pin ㊶ of IC801 ?
Does there appear CTL signal at pin ㊾ of IC801 ?
Does CTL amplifier circuit of IC701 (pins ① to ⑤) operate normally ?
Are pins ③, ④ and ⑤ of IC701 normal ?
Replace IC701.
Is pin ㉒ of IC801 normal ?
Replace IC801.
Check "Ⓐ".
Check "Ⓑ".
Replace the capstan motor.
Check Q707 and the composite sync. signal line.
Does there appear CTL signal at pin ㊽ of IC801 ?
Does CTL amplifier circuit of IC701 (pins ① to ⑤) operate normally ?
Check the line between pin ㊽ IC801 and pin ① of IC701.
Do the circuits around pins ① to ⑤ of IC701 operate normally ?
Replace defective parts.
Is the harness AC-MH normal ?
Replace the harness AC-MH.
Does the A/C head operate normally ?
Replace the A/C head.
Adjust the height of the A/C head.
Is there capstan APC signal at pin ㊶ of IC801 ?
Check the capstan motor unit.
Replace IC801.

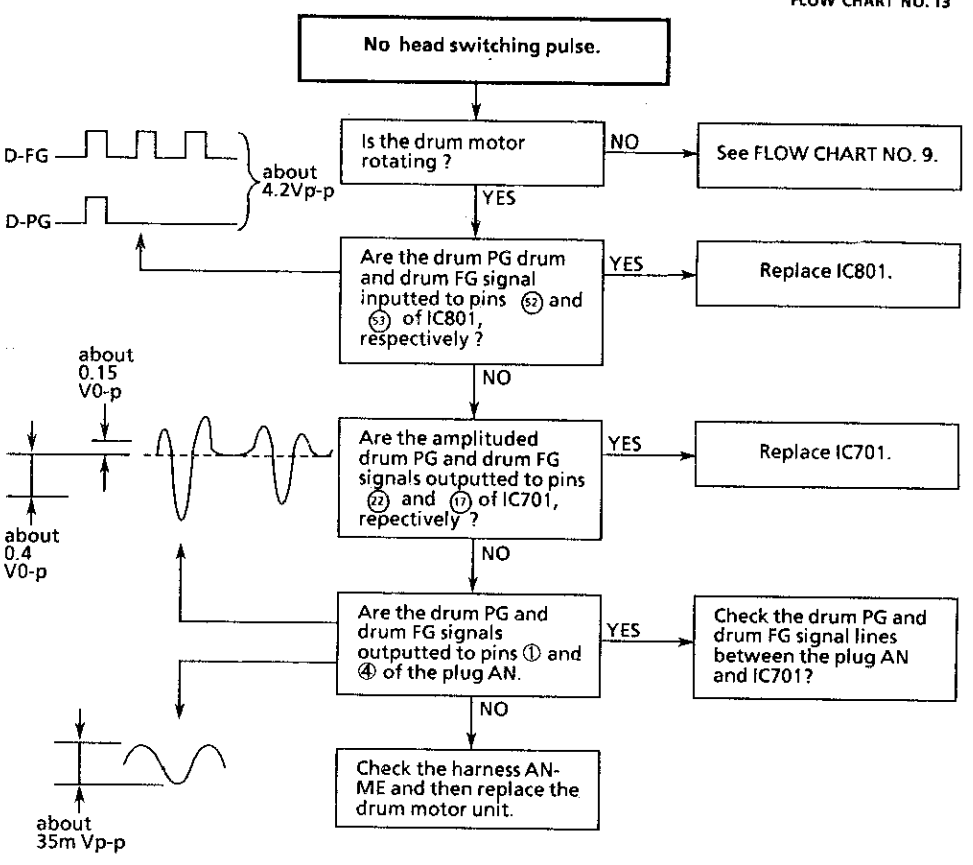
TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING

FLOW CHART NO. 12


No reel sensor pulse appears.
Insert the cassette, and put the unit in FF or REW mode.
about 0.8Vp-p
Is there the reel sensor pulse at pin ⑲ of the connector AM ?
YES
Check peripheral circuits of Q803.
NO
Is there the reel sensor pulse at pin ③ of the connector MF ?
YES
Check the harness AM-MF.
NO
Replace the reel sensor (located in the reel sensor PWB, F2977GE).

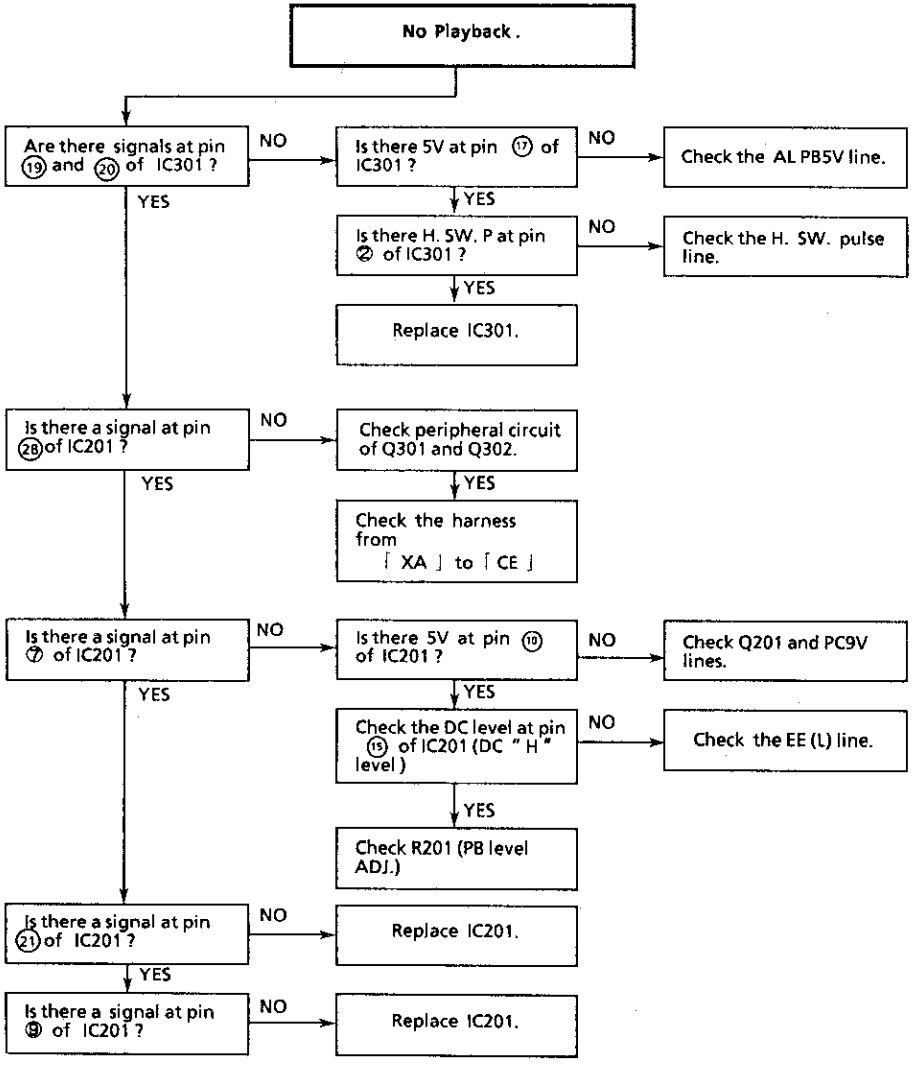
HEAD SWITCHING PULSE TROUBLESHOOTING

FLOW CHART NO. 13


No head switching pulse.
D-FG
D-PG
about 4.2Vp-p
Is the drum motor rotating ?
NO
See FLOW CHART NO. 9.
YES
Are the drum PG drum and drum FG signal inputted to pins ⑫ and ⑬ of IC801, respectively ?
YES
Replace IC801.
NO
about 0.15 V0-p
about 0.4 V0-p
Are the amplituded drum PG and drum FG signals outputted to pins ㉒ and ⑰ of IC701, repectively ?
YES
Replace IC701.
NO
Are the drum PG and drum FG signals outputted to pins ① and ④ of the plug AN.
YES
Check the drum PG and drum FG signal lines between the plug AN and IC701?
NO
about 35m Vp-p
Check the harness AN-ME and then replace the drum motor unit.

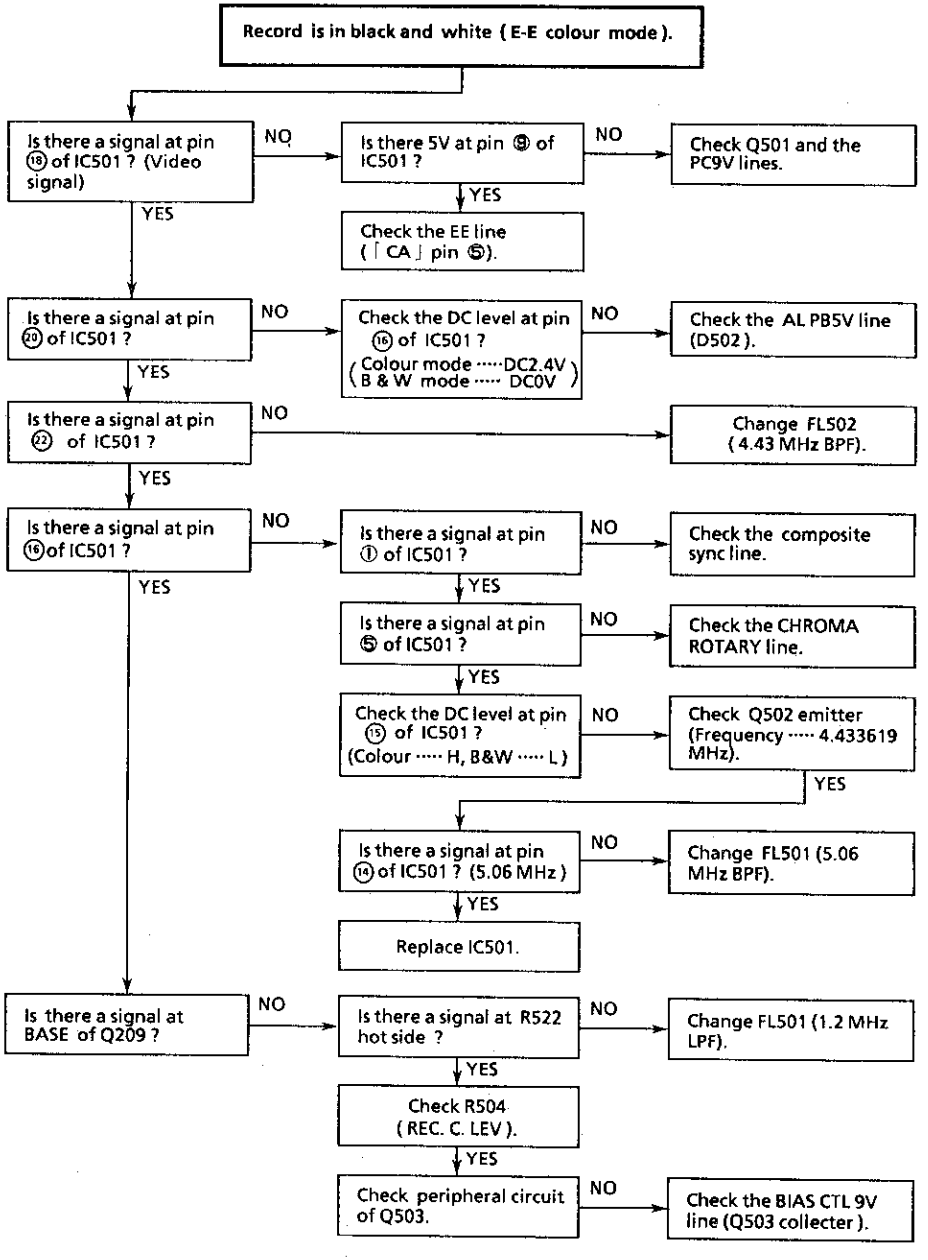
PLAYBACK MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 14


No Playback.
Are there signals at pin ⑲ and ⑳ of IC301 ?
NO
Is there 5V at pin ⑰ of IC301 ?
NO
Check the AL PB5V line.
YES
YES
Is there H. SW. P at pin ② of IC301 ?
NO
Check the H. SW. pulse line.
YES
Replace IC301.
Is there a signal at pin ㉘ of IC201 ?
NO
Check peripheral circuit of Q301 and Q302.
YES
YES
Check the harness from 「XA」 to 「CE」
Is there a signal at pin ⑦ of IC201 ?
NO
Is there 5V at pin ⑩ of IC201 ?
NO
Check Q201 and PC9V lines.
YES
YES
Check the DC level at pin ⑮ of IC201 (DC "H" level)
NO
Check the EE (L) line.
YES
Check R201 (PB level ADJ.)
Is there a signal at pin ㉑ of IC201 ?
NO
Replace IC201.
YES
Is there a signal at pin ⑨ of IC201 ?
NO
Replace IC201.

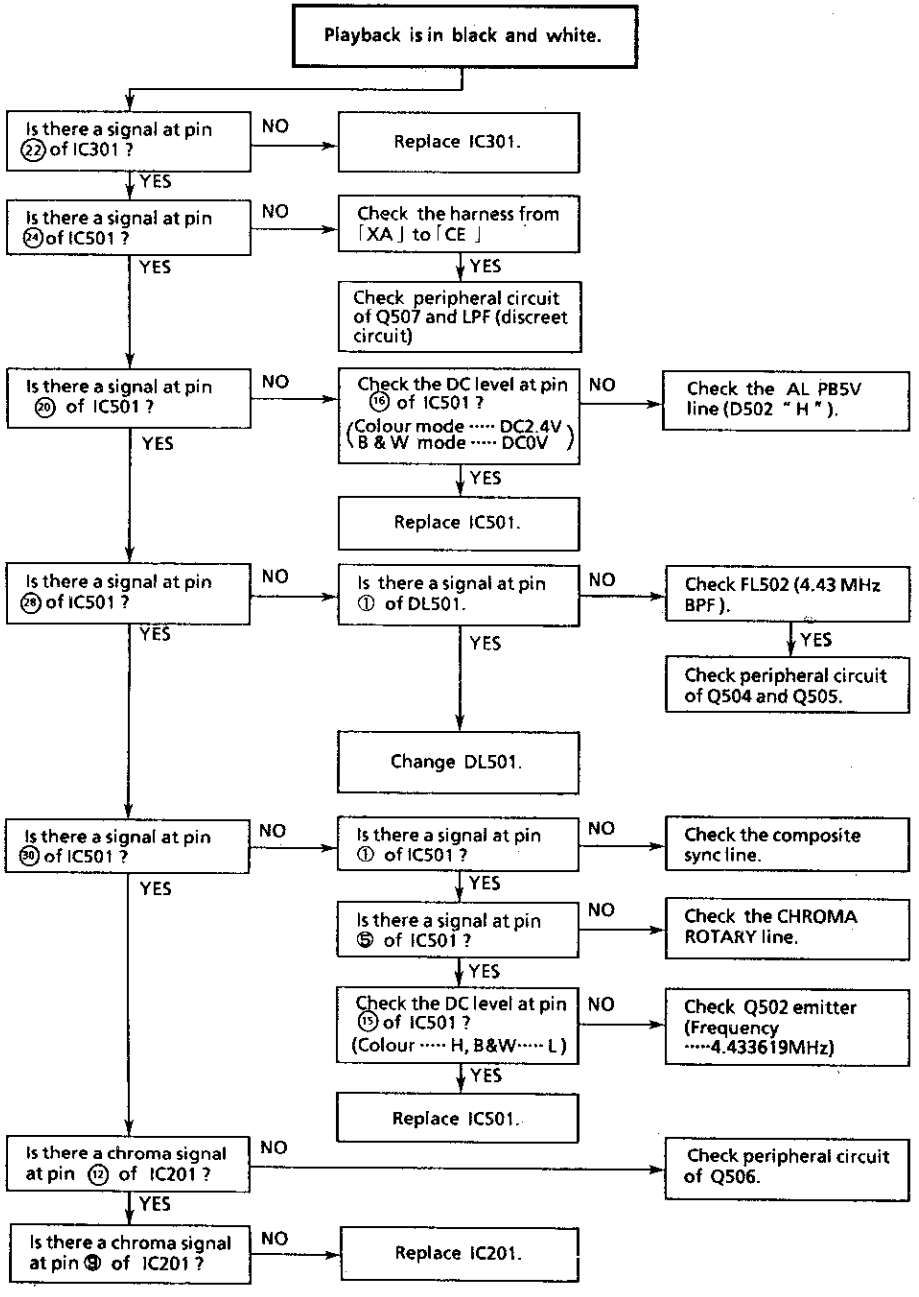
RECORDING MODE (CHROMA) TROUBLESHOOTING

FLOW CHART NO. 15


Record is in black and white (E-E colour mode).
Is there a signal at pin ⑱ of IC501 ? (Video signal)
NO
Is there 5V at pin ⑨ of IC501 ?
NO
Check Q501 and the PC9V lines.
YES
YES
Check the EE line (「CA」 pin ⑤).
Is there a signal at pin ⑳ of IC501 ?
NO
Check the DC level at pin ⑯ of IC501 ? (Colour mode ····· DC2.4V / B & W mode ····· DC0V)
NO
Check the AL PB5V line (D502).
YES
Is there a signal at pin ㉒ of IC501 ?
NO
Change FL502 (4.43 MHz BPF).
YES
Is there a signal at pin ⑯ of IC501 ?
NO
Is there a signal at pin ① of IC501 ?
NO
Check the composite sync line.
YES
YES
Is there a signal at pin ⑤ of IC501 ?
NO
Check the CHROMA ROTARY line.
YES
Check the DC level at pin ⑮ of IC501 ? (Colour ····· H, B&W ····· L)
NO
Check Q502 emitter (Frequency ····· 4.433619 MHz).
YES
YES
Is there a signal at pin ⑭ of IC501 ? (5.06 MHz)
NO
Change FL501 (5.06 MHz BPF).
YES
Replace IC501.
Is there a signal at BASE of Q209 ?
NO
Is there a signal at R522 hot side ?
NO
Change FL501 (1.2 MHz LPF).
YES
Check R504 (REC. C. LEV).
YES
Check peripheral circuit of Q503.
NO
Check the BIAS CTL 9V line (Q503 collecter).

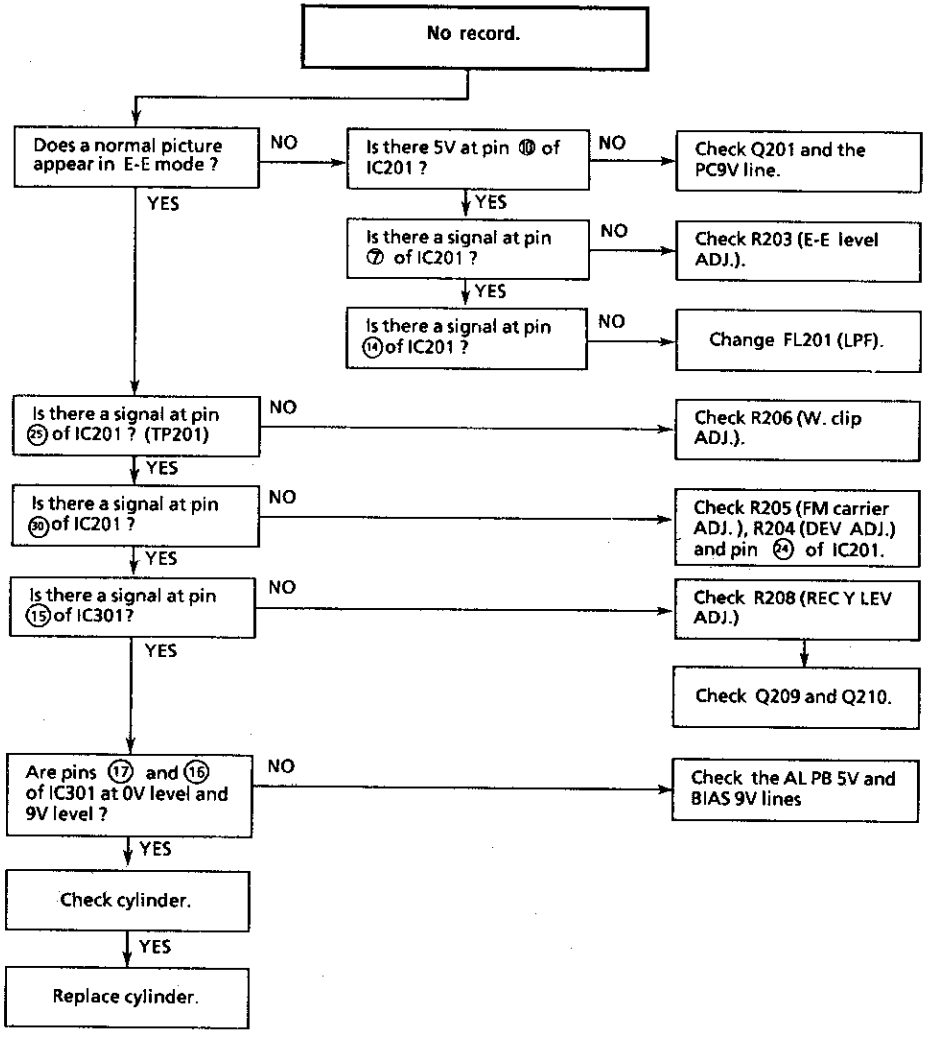
PLAYBACK MODE (CHROMA) TROUBLESHOOTING

FLOW CHART NO. 16


Playback is in black and white.
Is there a signal at pin ㉒ of IC301 ?
NO
Replace IC301.
YES
Is there a signal at pin ㉔ of IC501 ?
NO
Check the harness from 「XA」 to 「CE」
YES
Check peripheral circuit of Q507 and LPF (discreet circuit)
YES
Is there a signal at pin ⑳ of IC501 ?
NO
Check the DC level at pin ⑯ of IC501 ? (Colour mode ····· DC2.4V B & W mode ····· DC0V)
NO
Check the AL PB5V line (D502 " H ").
YES
Replace IC501.
YES
Is there a signal at pin ㉘ of IC501 ?
NO
Is there a signal at pin ① of DL501.
NO
Check FL502 (4.43 MHz BPF).
YES
Check peripheral circuit of Q504 and Q505.
YES
Change DL501.
YES
Is there a signal at pin ㉚ of IC501 ?
NO
Is there a signal at pin ① of IC501 ?
NO
Check the composite sync line.
YES
Is there a signal at pin ⑤ of IC501 ?
NO
Check the CHROMA ROTARY line.
YES
Check the DC level at pin ⑮ of IC501 ? (Colour ····· H, B&W····· L)
NO
Check Q502 emitter (Frequency ·····4.433619MHz)
YES
Replace IC501.
YES
Is there a chroma signal at pin ⑫ of IC201 ?
NO
Check peripheral circuit of Q506.
YES
Is there a chroma signal at pin ⑨ of IC201 ?
NO
Replace IC201.

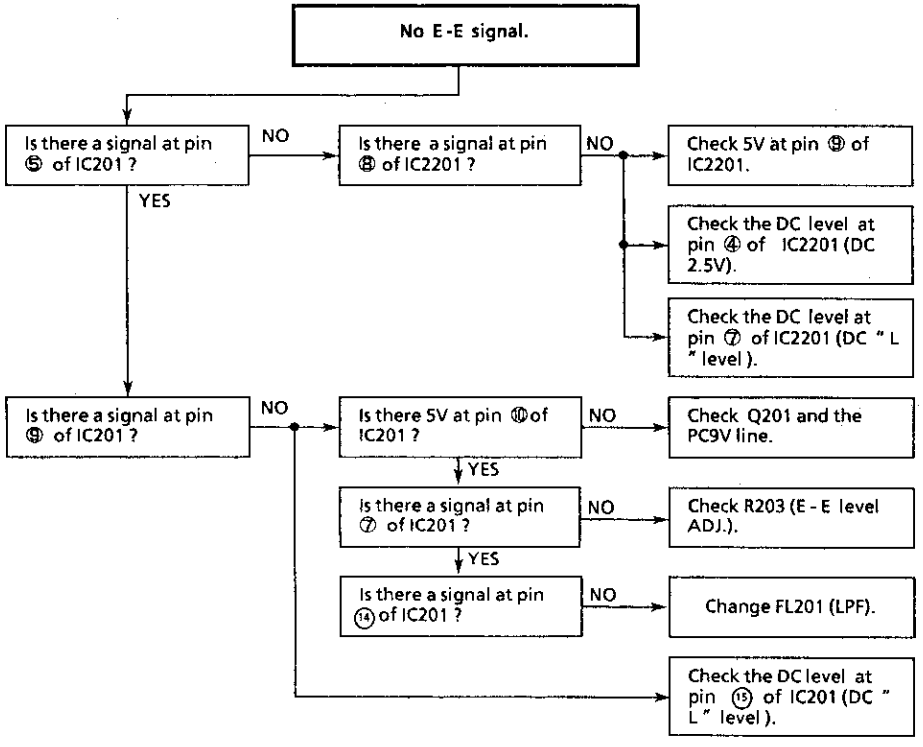
RECORDING MODE (LUMINANCE) TROUBLESHOOTING

FLOW CHART NO. 17


No record.
Does a normal picture appear in E-E mode ?
NO
Is there 5V at pin ⑩ of IC201 ?
NO
Check Q201 and the PC9V line.
YES
Is there a signal at pin ⑦ of IC201 ?
NO
Check R203 (E-E level ADJ.).
YES
Is there a signal at pin ⑭ of IC201 ?
NO
Change FL201 (LPF).
YES
Is there a signal at pin ㉕ of IC201 ? (TP201)
NO
Check R206 (W. clip ADJ.).
YES
Is there a signal at pin ㉚ of IC201 ?
NO
Check R205 (FM carrier ADJ.), R204 (DEV ADJ.) and pin ㉔ of IC201.
YES
Is there a signal at pin ⑮ of IC301 ?
NO
Check R208 (REC Y LEV ADJ.)
YES
Check Q209 and Q210.
Are pins ⑰ and ⑯ of IC301 at 0V level and 9V level ?
NO
Check the AL PB 5V and BIAS 9V lines
YES
Check cylinder.
YES
Replace cylinder.

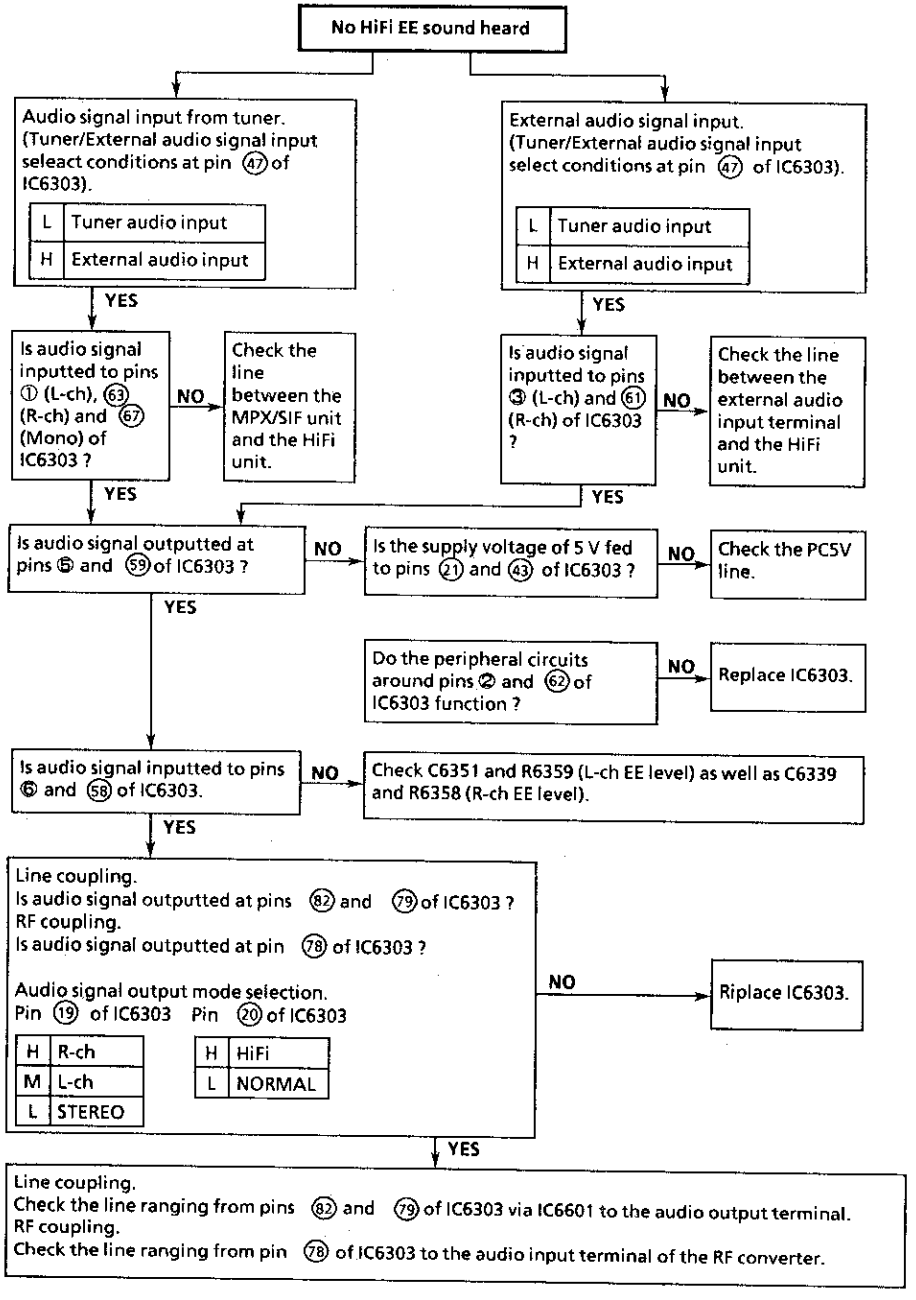
E-E MODE TROUBLESHOOTING

FLOW CHART NO. 18


No E-E signal.
Is there a signal at pin ⑤ of IC201 ?
NO
Is there a signal at pin ⑧ of IC2201 ?
NO
Check 5V at pin ⑨ of IC2201.
Check the DC level at pin ④ of IC2201 (DC 2.5V).
Check the DC level at pin ⑦ of IC2201 (DC " L " level).
YES
Is there a signal at pin ⑨ of IC201 ?
NO
Is there 5V at pin ⑩ of IC201 ?
NO
Check Q201 and the PC9V line.
YES
Is there a signal at pin ⑦ of IC201 ?
NO
Check R203 (E - E level ADJ.).
YES
Is there a signal at pin ⑭ of IC201 ?
NO
Change FL201 (LPF).
Check the DC level at pin ⑮ of IC201 (DC " L " level).

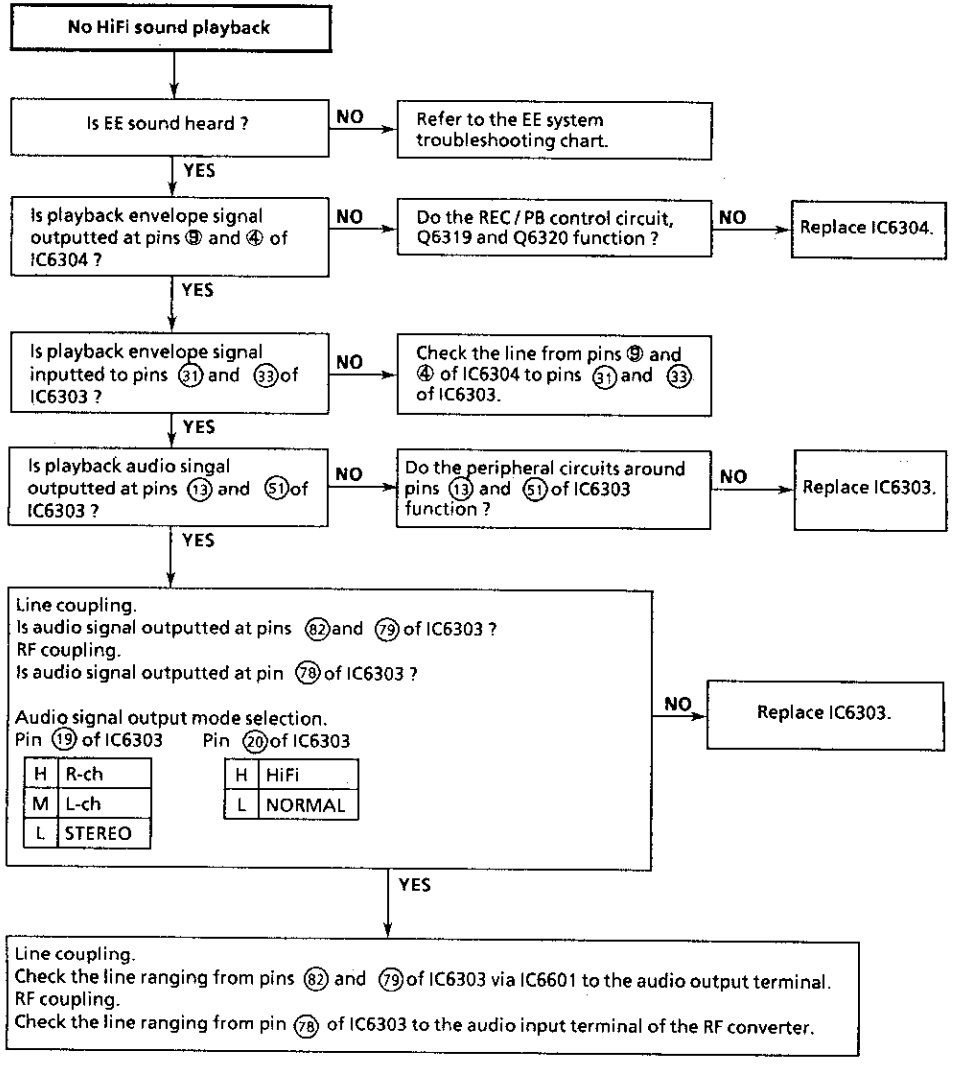
HiFi TROUBLESHOOTING (1)

FLOW CHART NO. 19


No HiFi EE sound heard
Audio signal input from tuner. (Tuner/External audio signal input seleact conditions at pin ㊼ of IC6303).
L Tuner audio input
H External audio input
External audio signal input. (Tuner/External audio signal input select conditions at pin ㊼ of IC6303).
L Tuner audio input
H External audio input
YES
YES
Is audio signal inputted to pins ① (L-ch), ㊸ (R-ch) and ㊼ (Mono) of IC6303 ?
NO
Check the line between the MPX/SIF unit and the HiFi unit.
Is audio signal inputted to pins ③ (L-ch) and ㊶ (R-ch) of IC6303 ?
NO
Check the line between the external audio input terminal and the HiFi unit.
YES
YES
Is audio signal outputted at pins ⑤ and ㊾ of IC6303 ?
NO
Is the supply voltage of 5 V fed to pins ㉑ and ㊸ of IC6303 ?
NO
Check the PC5V line.
YES
Do the peripheral circuits around pins ② and ㊷ of IC6303 function ?
NO
Replace IC6303.
Is audio signal inputted to pins ⑥ and ㊽ of IC6303.
NO
Check C6351 and R6359 (L-ch EE level) as well as C6339 and R6358 (R-ch EE level).
YES
Line coupling.
Is audio signal outputted at pins ㊷ and ㊾ of IC6303 ?
RF coupling.
Is audio signal outputted at pin ㊽ of IC6303 ?
Audio signal output mode selection.
Pin ⑲ of IC6303
H R-ch
M L-ch
L STEREO
Pin ⑳ of IC6303
H HiFi
L NORMAL
NO
Riplace IC6303.
YES
Line coupling.
Check the line ranging from pins ㊷ and ㊾ of IC6303 via IC6601 to the audio output terminal.
RF coupling.
Check the line ranging from pin ㊽ of IC6303 to the audio input terminal of the RF converter.

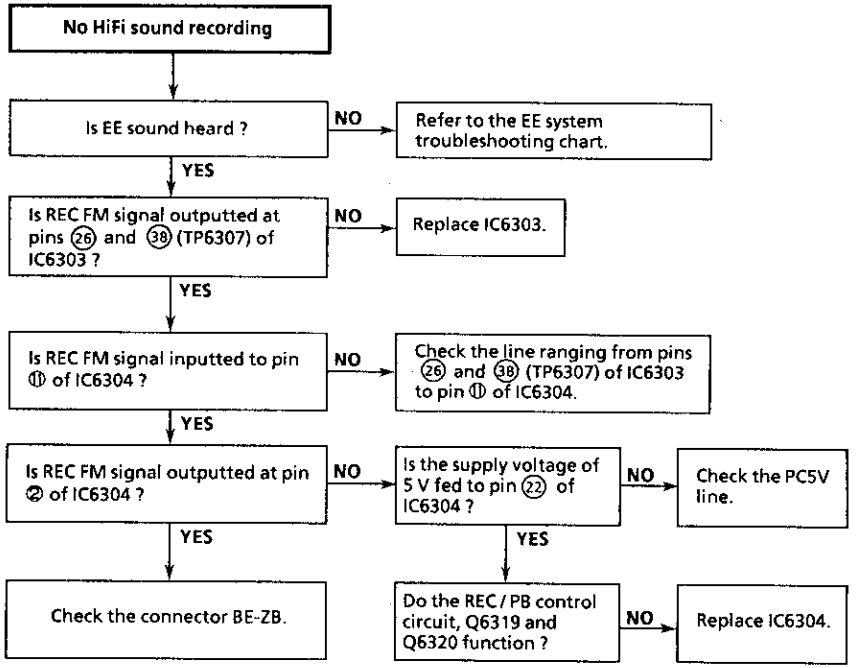
HiFi TROUBLESHOOTING (2)

FLOW CHART NO. 20

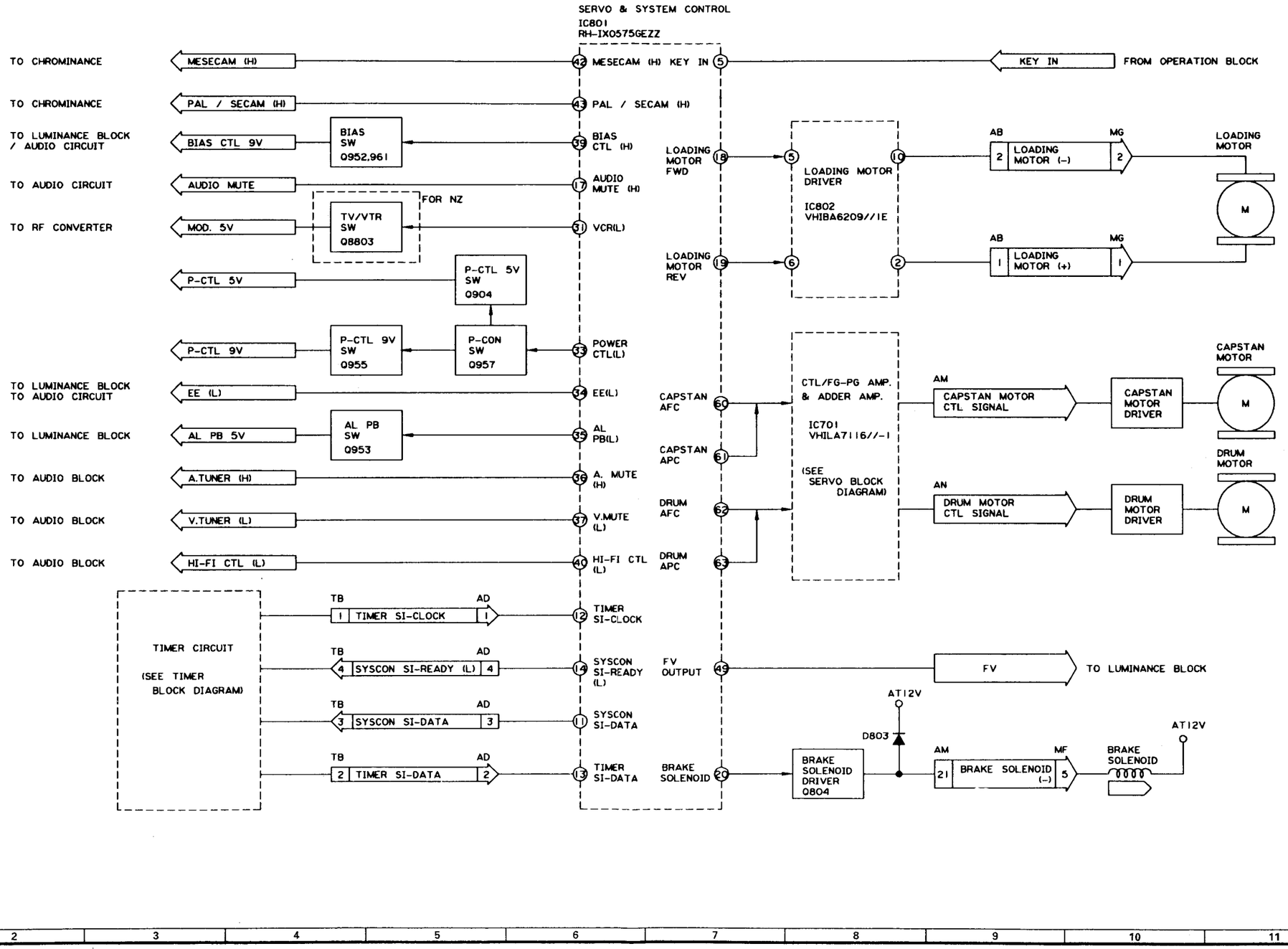

No HiFi sound playback
Is EE sound heard ?
NO
Refer to the EE system troubleshooting chart.
YES
Is playback envelope signal outputted at pins ⑨ and ④ of IC6304 ?
NO
Do the REC / PB control circuit, Q6319 and Q6320 function ?
NO
Replace IC6304.
YES
Is playback envelope signal inputted to pins ㉛ and ㉝ of IC6303 ?
NO
Check the line from pins ⑨ and ④ of IC6304 to pins ㉛ and ㉝ of IC6303.
YES
Is playback audio singal outputted at pins ⑬ and ㊶ of IC6303 ?
NO
Do the peripheral circuits around pins ⑬ and ㊶ of IC6303 function ?
NO
Replace IC6303.
YES
Line coupling.
Is audio signal outputted at pins ㉜ and ㉙ of IC6303 ?
RF coupling.
Is audio signal outputted at pin ㉘ of IC6303 ?
Audio signal output mode selection.
Pin ⑲ of IC6303
H R-ch
M L-ch
L STEREO
Pin ⑳ of IC6303
H HiFi
L NORMAL
NO
Replace IC6303.
YES
Line coupling.
Check the line ranging from pins ㉜ and ㉙ of IC6303 via IC6601 to the audio output terminal.
RF coupling.
Check the line ranging from pin ㉘ of IC6303 to the audio input terminal of the RF converter.

HiFi TROUBLESHOOTING (3)

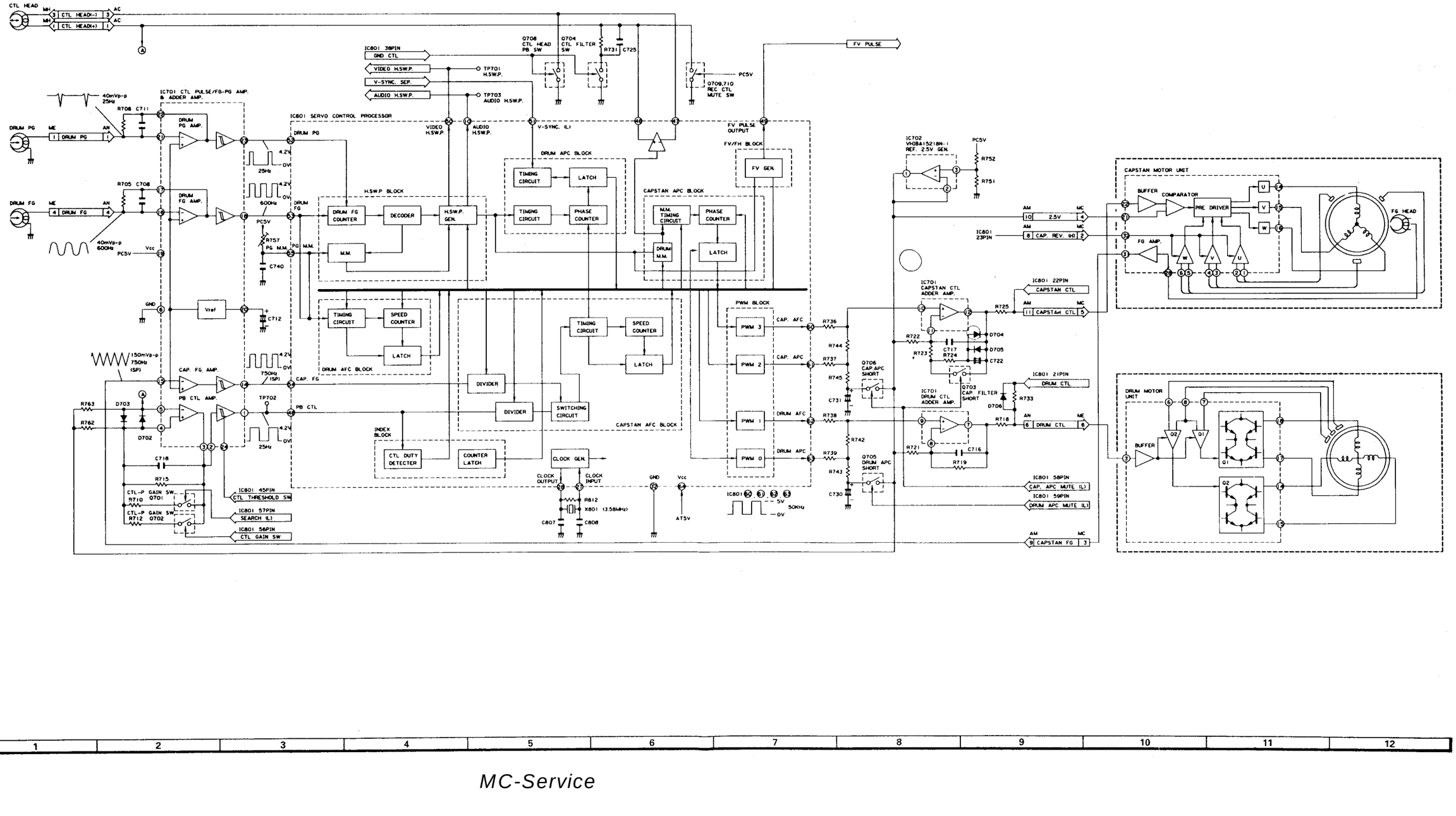
FLOW CHART NO. 21


No HiFi sound recording
Is EE sound heard ?
NO
Refer to the EE system troubleshooting chart.
YES
Is REC FM signal outputted at pins ㉖ and ㊳ (TP6307) of IC6303 ?
NO
Replace IC6303.
YES
Is REC FM signal inputted to pin ⑪ of IC6304 ?
NO
Check the line ranging from pins ㉖ and ㊳ (TP6307) of IC6303 to pin ⑪ of IC6304.
YES
Is REC FM signal outputted at pin ② of IC6304 ?
NO
Is the supply voltage of 5 V fed to pin ㉒ of IC6304 ?
NO
Check the PC5V line.
YES
YES
Check the connector BE-ZB.
Do the REC / PB control circuit, Q6319 and Q6320 function ?
NO
Replace IC6304.

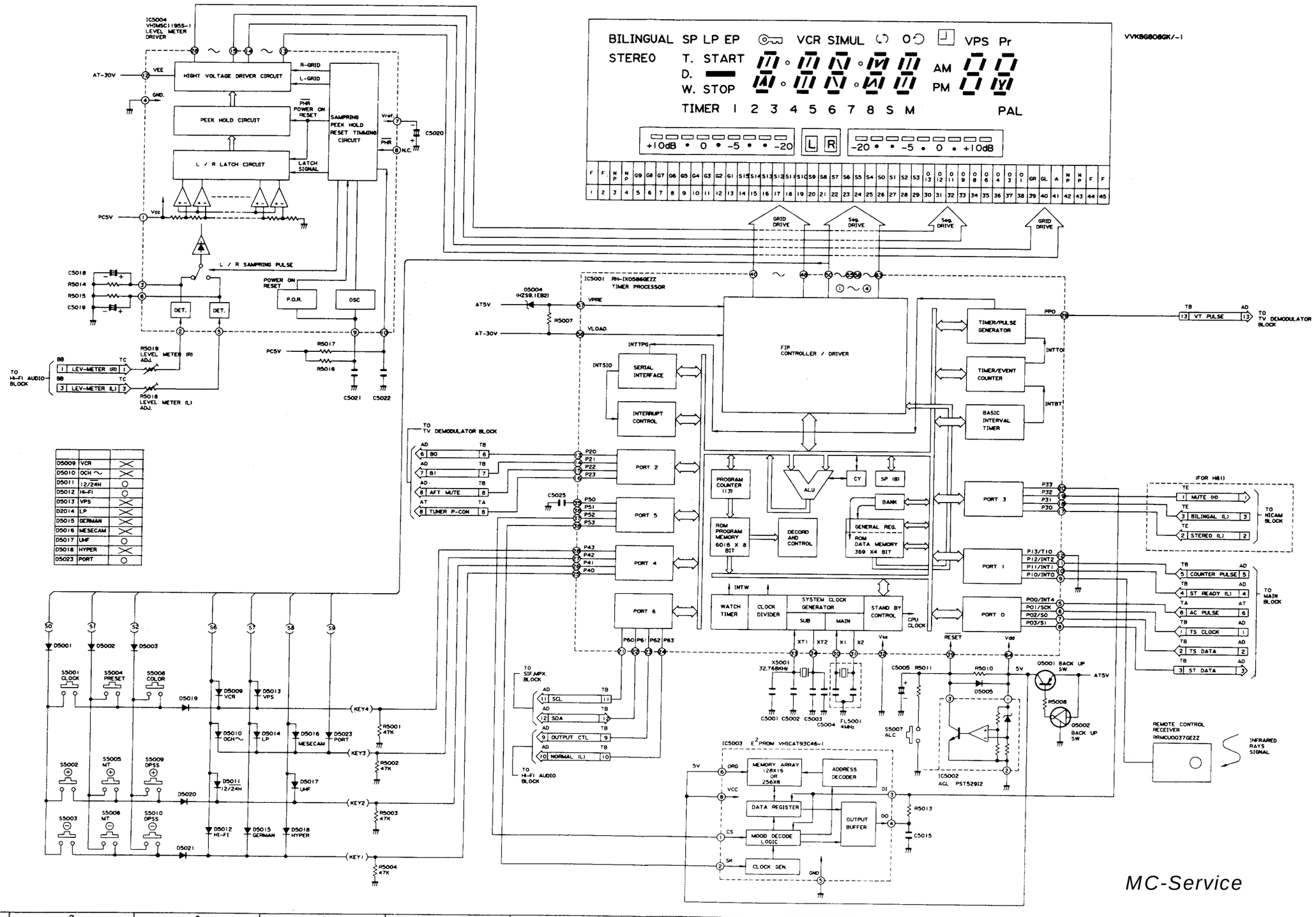
SYSTEM CONTROL BLOCK DIAGRAM



SERVO PROCESS BLOCK DIAGRAM



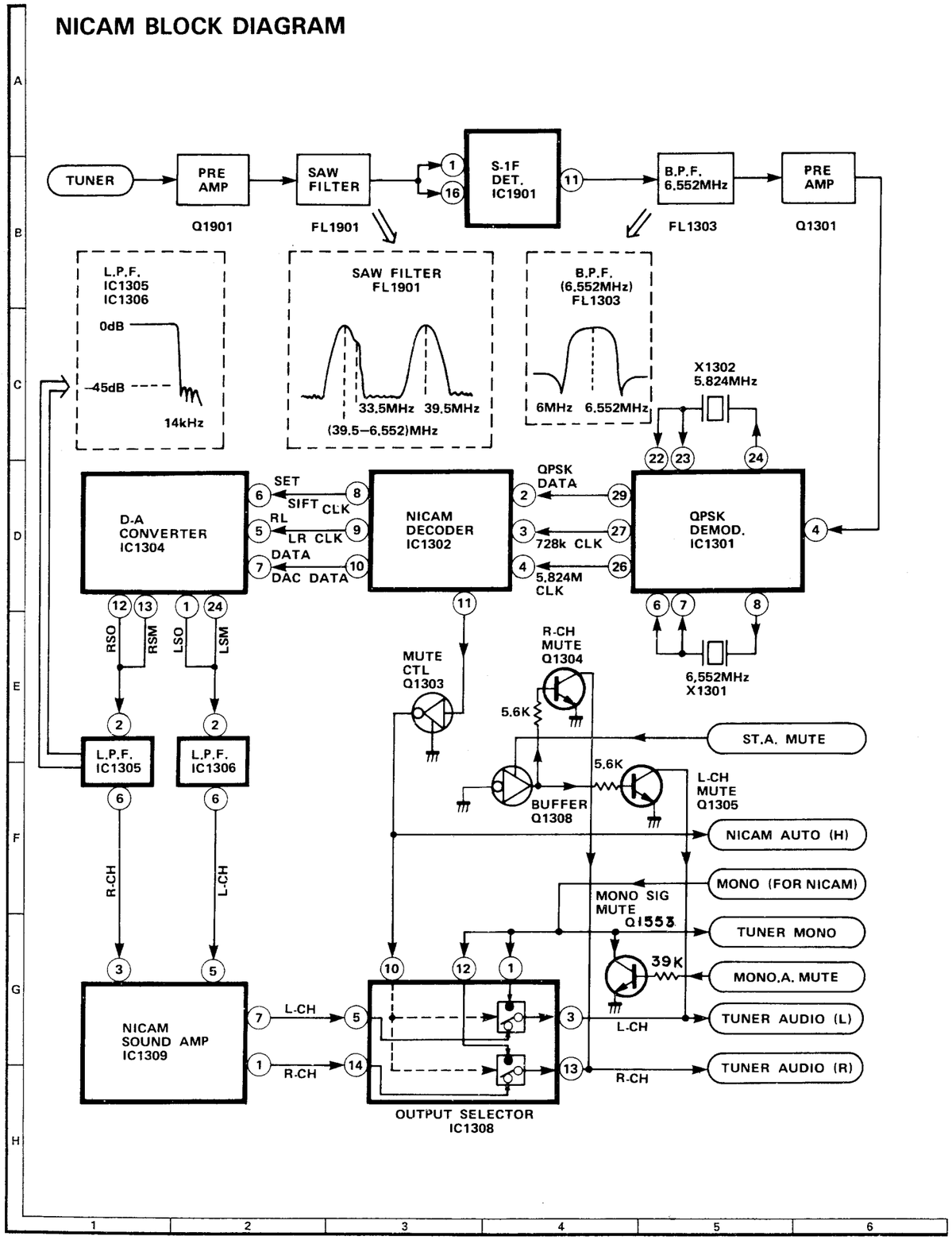
TIMER / LEVEL METER BLOCK DIAGRAM



MC-Service

VC-H81HM

NICAM BLOCK DIAGRAM



SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:

BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET.
PARTS MARKED WITH "⚠" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.
BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:

1. *DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.*
2. *SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.*

NOTES:

1. *The unit of resistance "ohm" is omitted(K = 1000 ohm, M = 1 Meg ohm).*
2. *All resistors are 1 / 8 watt, unless otherwise noted.*
3. *The unit of capacitance "F" is omitted (μ = μF, p = μμF).*
4. *The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.*

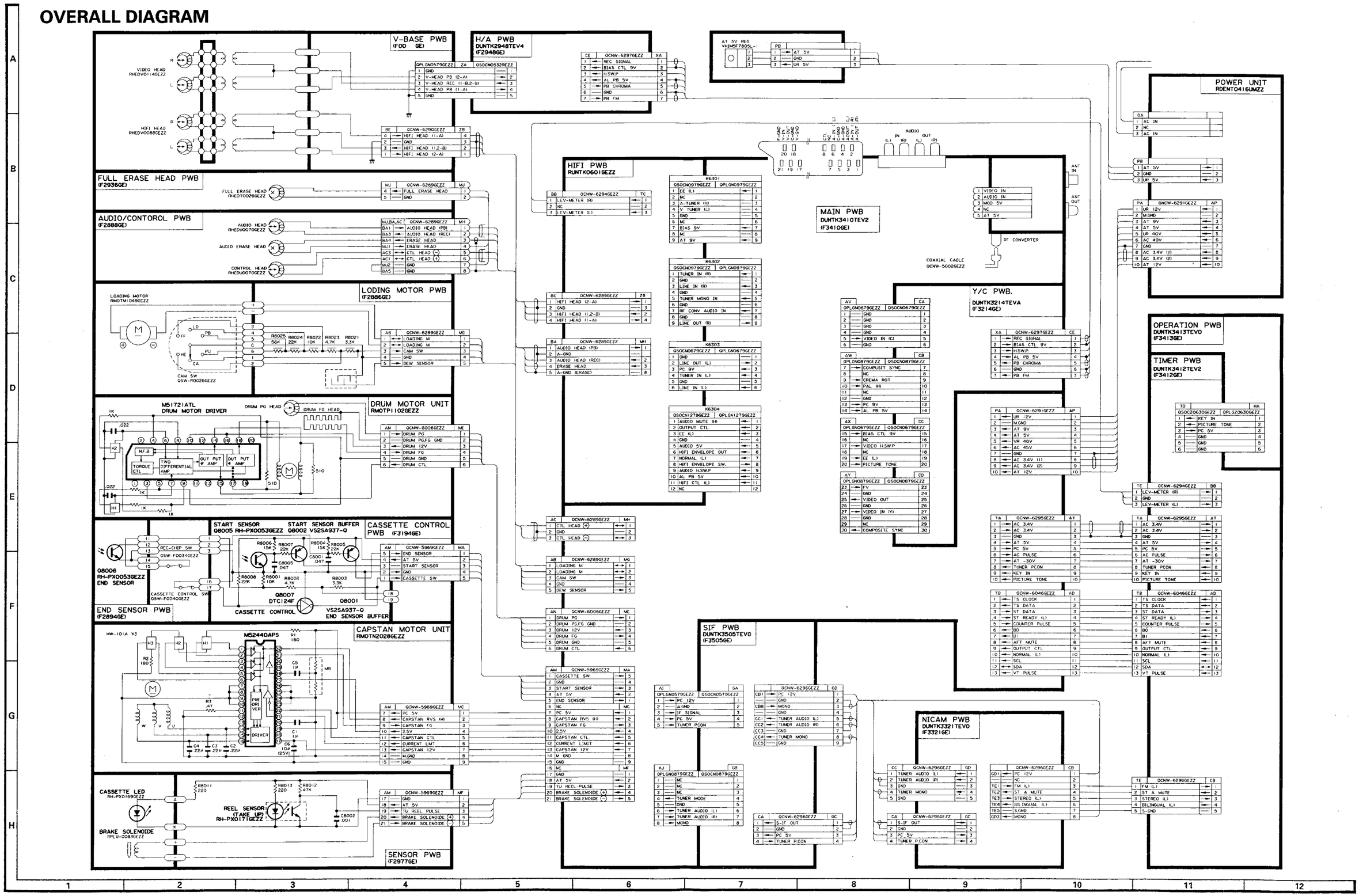
VOLTAGE MEASUREMENT CONDITIONS:

1. *DC voltages are measured between points indicated and chassis ground by VTVM, with AC240V, 50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.*
2. *Voltages are measured with 10000μV B & W or colour signal.*

WAVEFORM MEASUREMENT CONDITIONS:
10000μV 87.5 percent modulated colour bar signal is fed into tuner.

CAUTION:
This circuit diagram is original one. Therefore there may be a slight difference from yours.

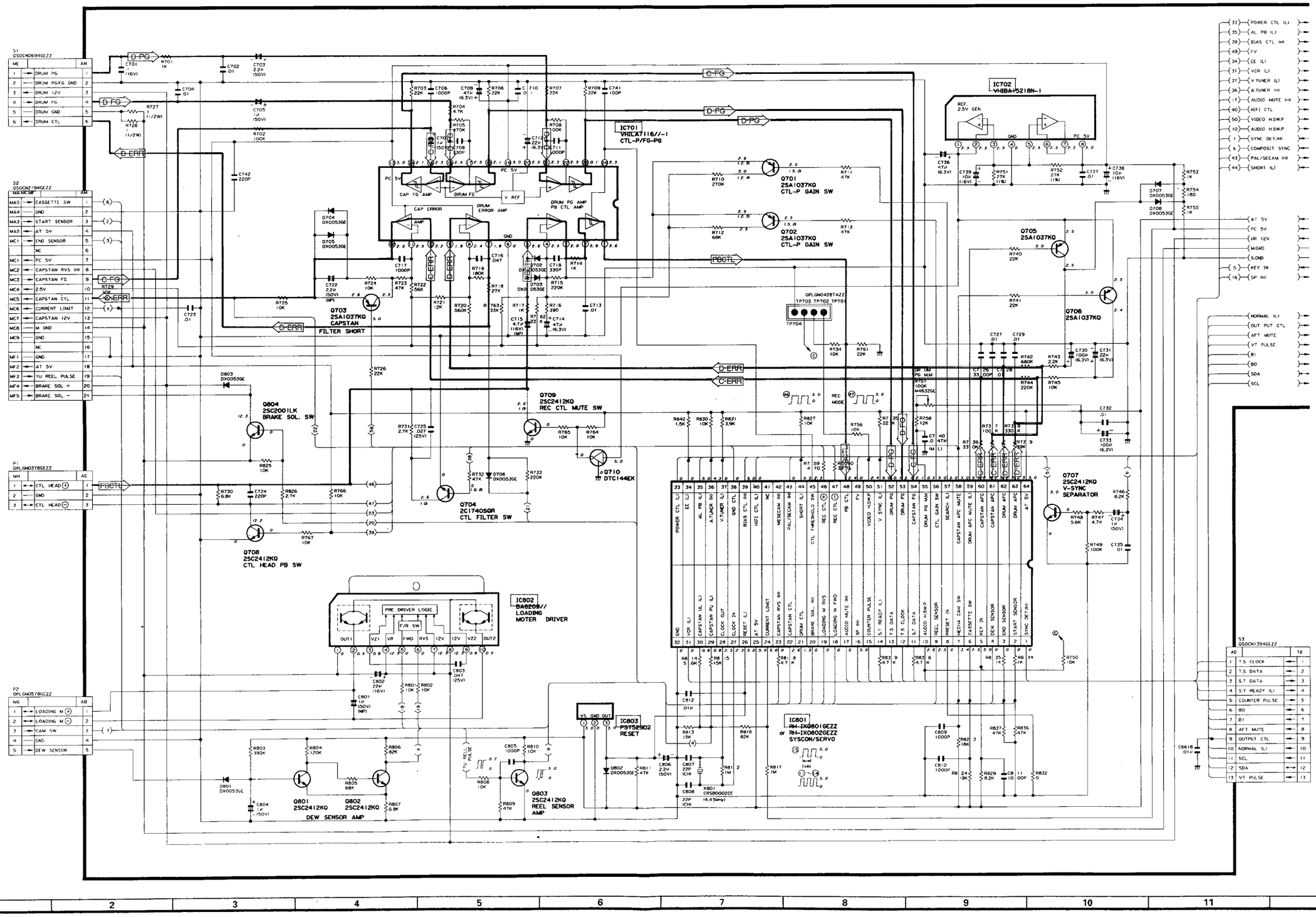
OVERALL DIAGRAM



MC-Service

MAIN CIRCUIT (1)

D-ERR Drum Error Voltage
D-FG Drum Frequency Comparison Signal
D-PG Drum Phase Comparison Signal
C-ERR Capstan Error Voltage
C-FG Capstan Frequency Comparison Signal
PBCTL Playback Control Comparison Signal



• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

MAIN CIRCUIT (2)

REC-Y Recording Luminance Signal

REC-C Recording Chrominance Signal

PB-C Playback Chrominance signal

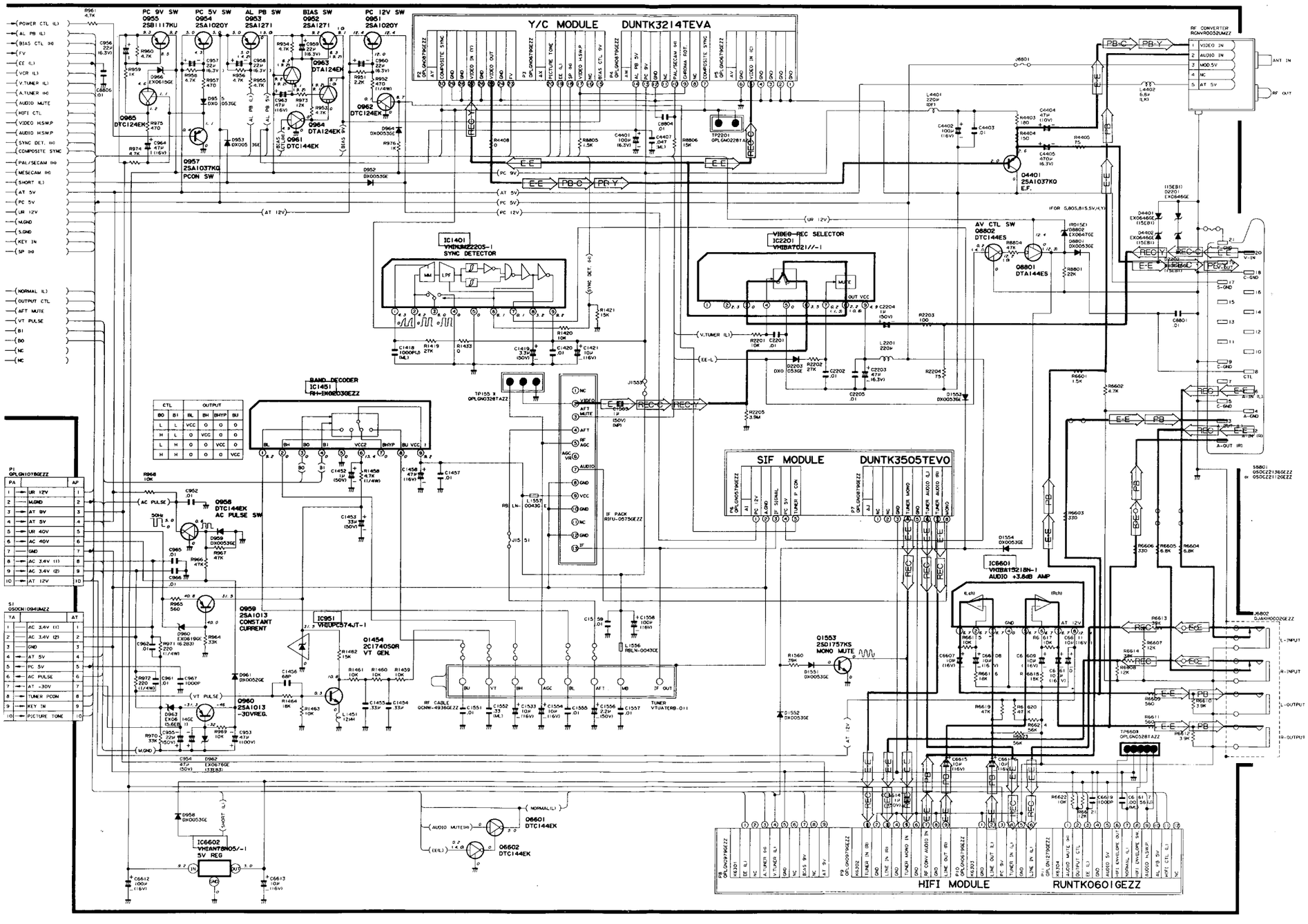
PB-Y Playback Luminance Signal

E-E Video E-E Signal

PB Audio Playback Signal

REC Audio Recording Signal

E-E Audio E-E Signal



CTL		OUTPUT			
BO	BI	BL	BH	BHYP	BU
L	L	VCC	0	0	0
H	L	0	VCC	0	0
L	H	0	0	VCC	0
H	H	0	0	0	VCC

P1 QPLGN1078GEZZ		AP
PA		
1	UR 12V	1
2	M.GND	2
3	AT 9V	3
4	AT 5V	4
5	UR 40V	5
6	AC 40V	6
7	GND	7
8	AC 3.4V (1)	8
9	AC 3.4V (2)	9
10	AT 12V	10

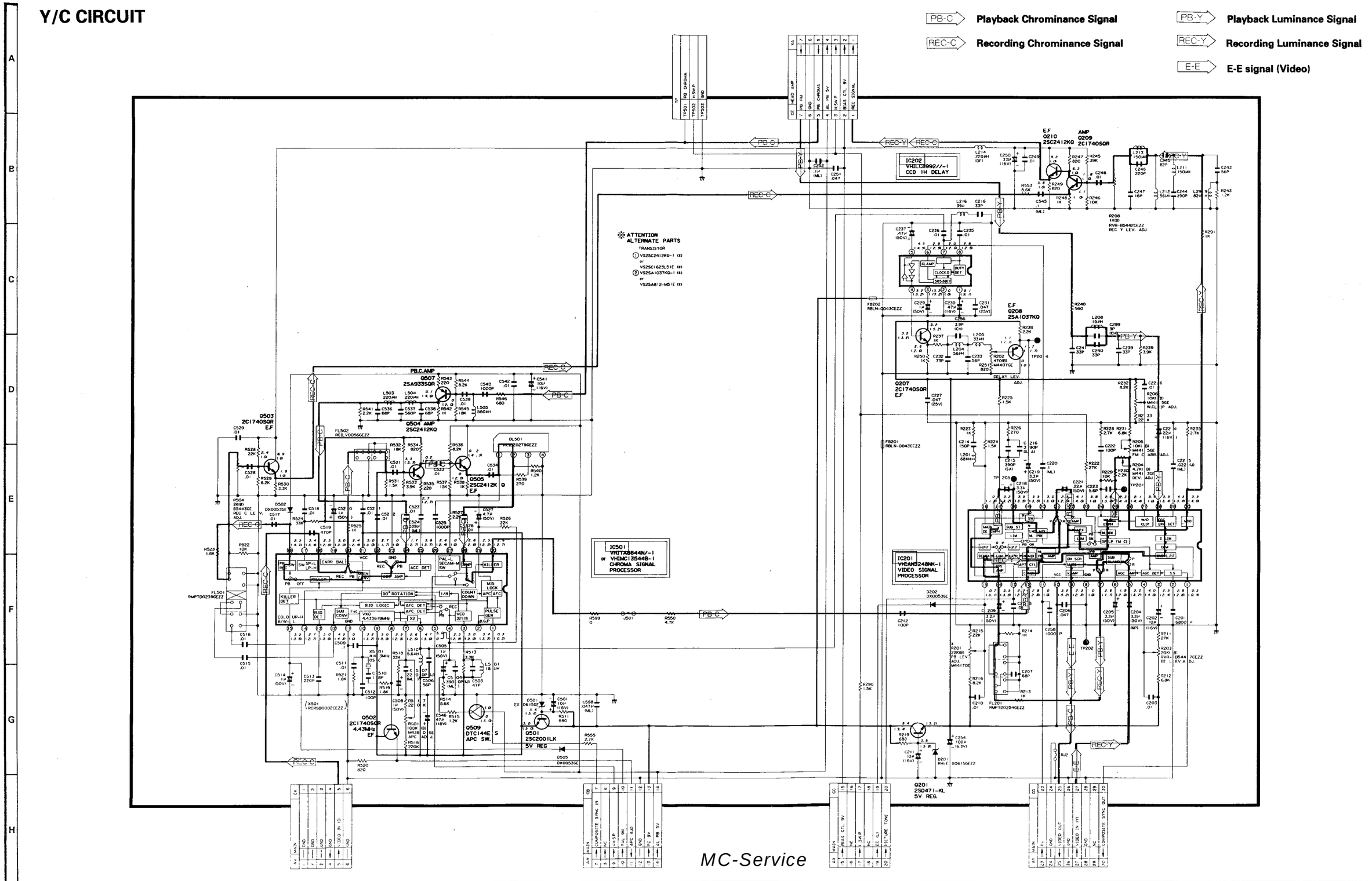
S1 QSOCN1084UMZZ		AT
TA		
1	AC 3.4V (1)	1
2	AC 3.4V (2)	2
3	GND	3
4	AT 5V	4
5	PC 5V	5
6	AC PULSE	6
7	AT -30V	7
8	TUNER PCON	8
9	KEY IN	9
10	PICTURE TONE	10

• VOLTAGE MEASUREMENT MODE

PB ..... Parentheses( )
REC ..... Without Parentheses

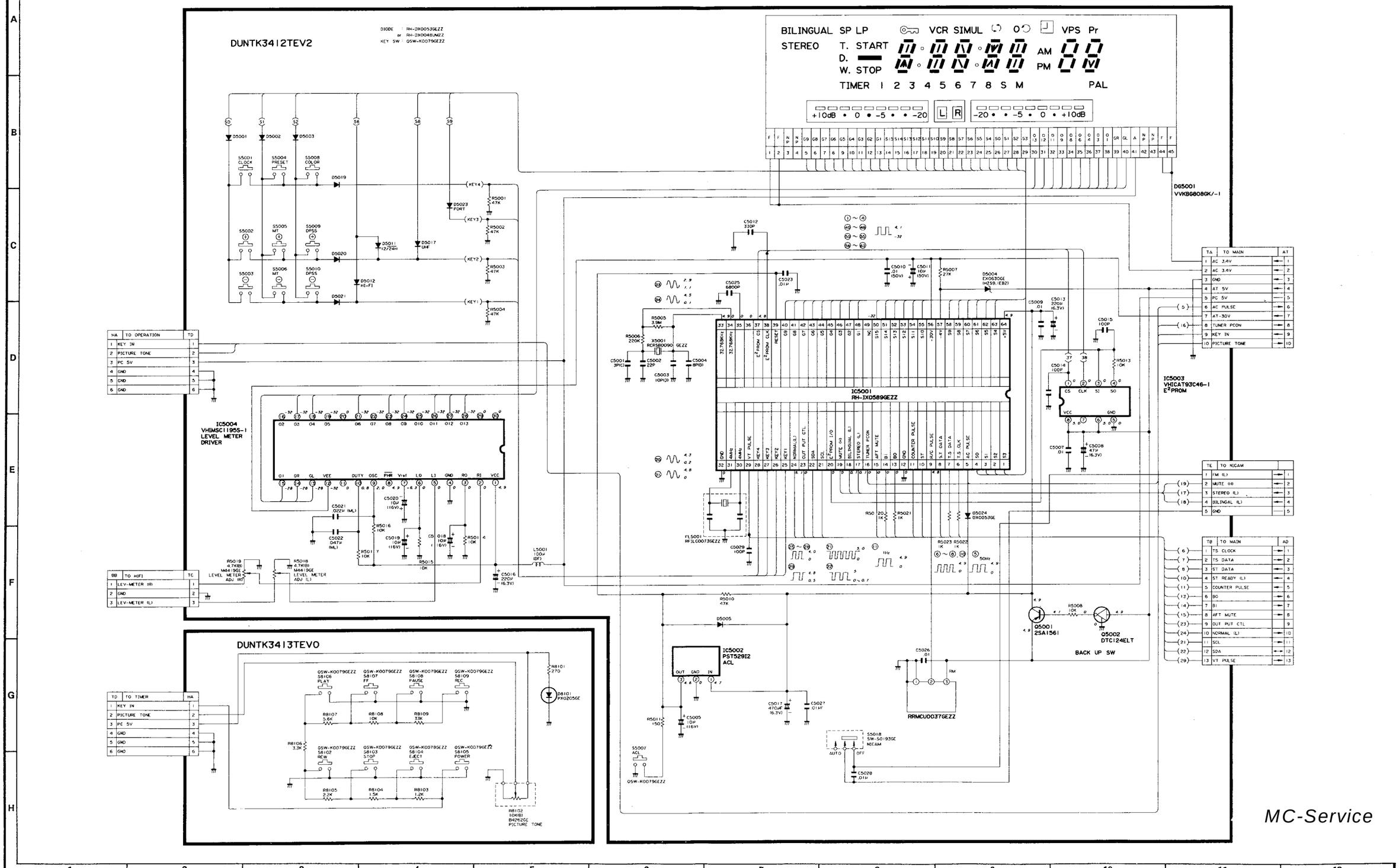
Y/C CIRCUIT

PB-C Playback Chrominance Signal
REC-C Recording Chrominance Signal
PB-Y Playback Luminance Signal
REC-Y Recording Luminance Signal
E-E E-E signal (Video)



• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses( )
REC ..... Without Parentheses

TIMER /OPERATION CIRCUIT



	1	2	3	4	5	6	7	8	9	10	11	12

• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses( )
REC ..... Without Parentheses

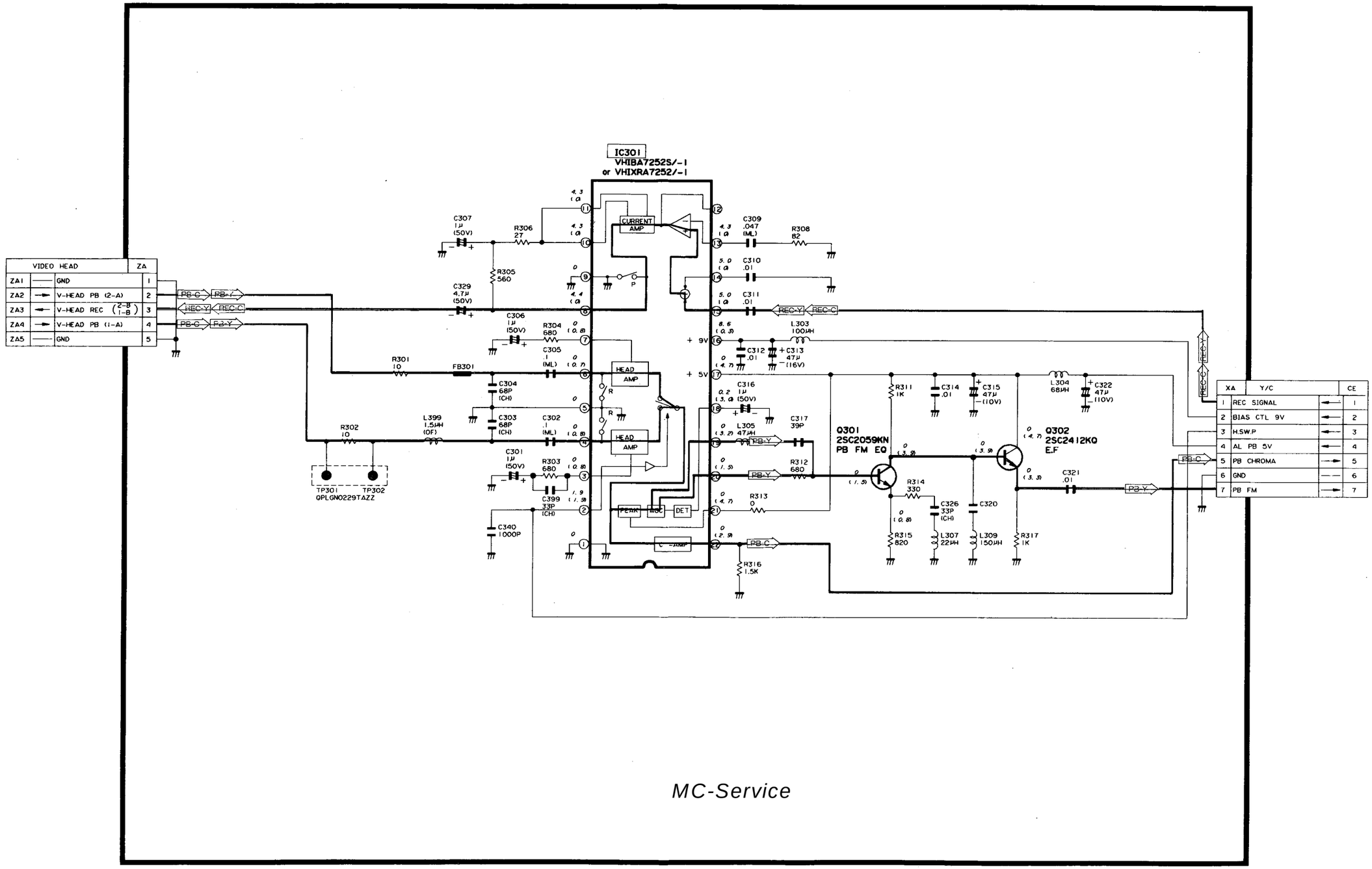
HEAD AMPLIFIER CIRCUIT

PB-C Playback Chrominance Signal

PB-Y Playback Luminance Signal

REC-C Recording Chrominance Signal

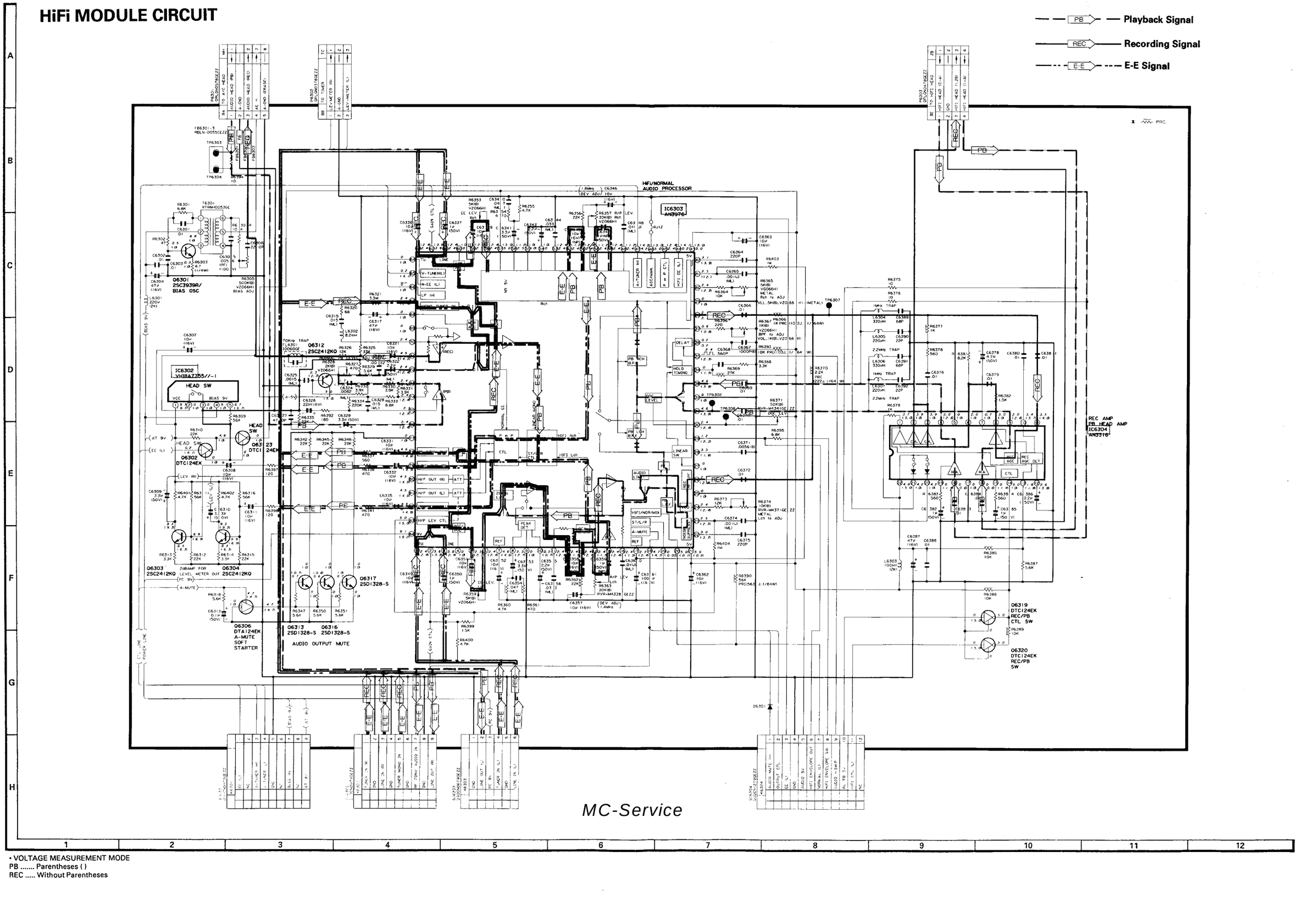
REC-Y Recording Luminance Signal



MC-Service

• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

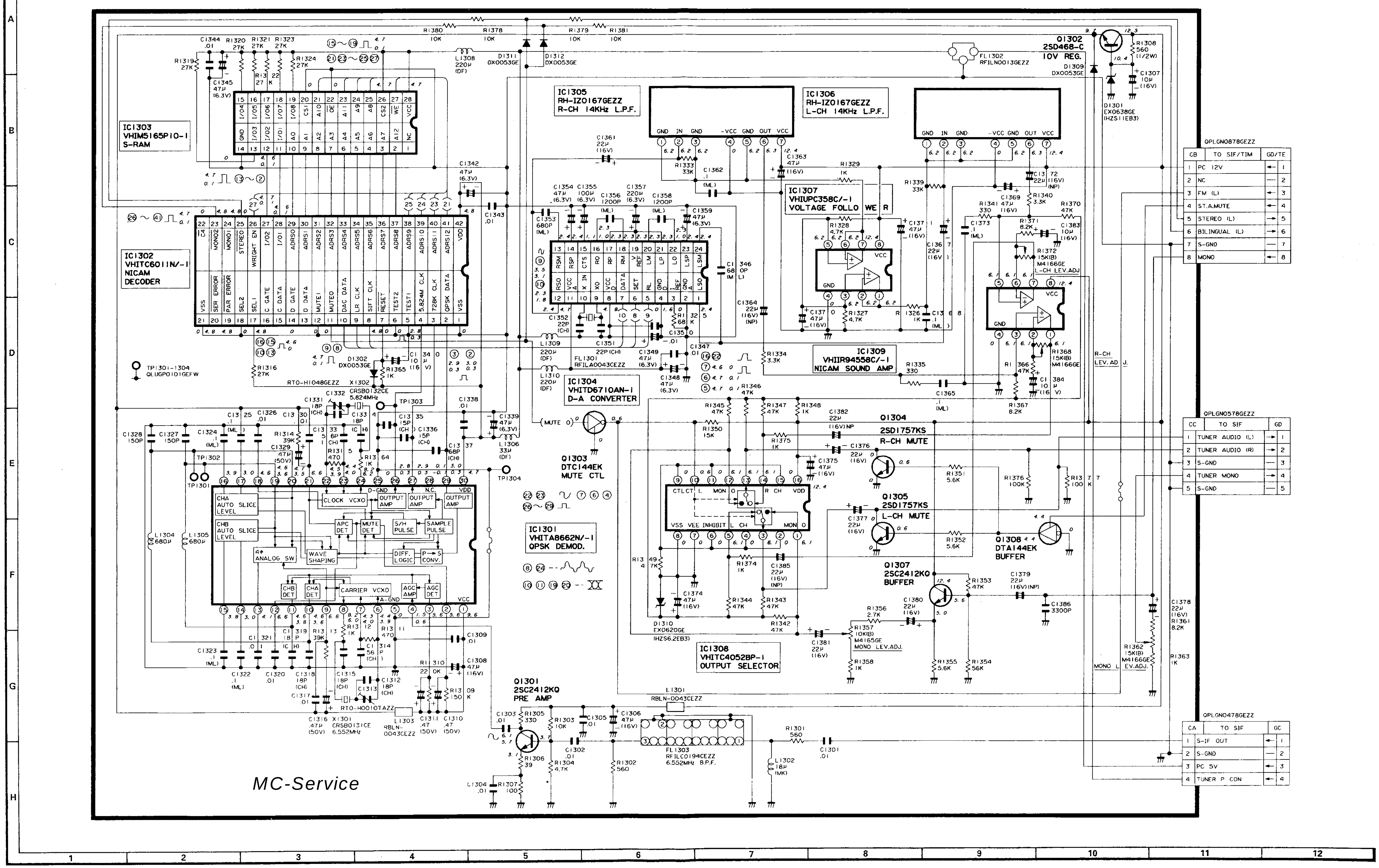
HiFi MODULE CIRCUIT



• VOLTAGE MEASUREMENT MODE
PB ..... Parentheses ( )
REC ..... Without Parentheses

VC-H81HM

NICAM CIRCUIT


IC1303
VHIM5165P10-1
S-RAM
IC1302
VHITC6011N/-1
NICAM
DECODER
IC1305
RH-IZ0167GEZZ
R-CH 14KHz L.P.F.
IC1306
RH-IZ0167GEZZ
L-CH 14KHz L.P.F.
IC1307
VHIUPC358C/-1
VOLTAGE FOLLOWER
IC1309
VHIIR94558C/-1
NICAM SOUND AMP
IC1304
VHITD6710AN-1
D-A CONVERTER
Q1303
DTC144EK
MUTE CTL
IC1301
VHITA8662N/-1
QPSK DEMOD.
IC1308
VHITC4052BP-1
OUTPUT SELECTOR
Q1301
2SC2412KQ
PRE AMP
Q1302
2SD468-C
10V REG.
Q1304
2SD1757KS
R-CH MUTE
Q1305
2SD1757KS
L-CH MUTE
Q1307
2SC2412KQ
BUFFER
Q1308
DTA144EK
BUFFER
FL1303
RFILC0194CEZZ
6.552MHz B.P.F.
X1301
CRSB0131CE
6.552MHz
X1302
CRSB0132CE
5.824MHz
TP1301-1304
QLUGP0101GEFW
QPLGN0878GEZZ
CB | TO SIF/TIM | GD/TE
1 PC 12V
2 NC
3 FM (L)
4 ST.A.MUTE
5 STEREO (L)
6 BILINGUAL (L)
7 S-GND
8 MONO
QPLGN0578GEZZ
CC | TO SIF | GD
1 TUNER AUDIO (L)
2 TUNER AUDIO (R)
3 S-GND
4 TUNER MONO
5 S-GND
QPLGN0478GEZZ
CA | TO SIF | GC
1 S-IF OUT
2 S-GND
3 PC 5V
4 TUNER P CON
L-CH LEV.ADJ
R-CH LEV.ADJ.
MONO LEV.ADJ.
MC-Service

• VOLTAGE MEASUREMENT MODE

PB .... Parentheses( )

REC ..... Without Parentheses

★ MARK : SPARE PARTS DELIVERY SECTION

REPLACEMENT PARTS LIST
PARTS REPLACEMENT

Many electrical and mechanical parts in video cassette recorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

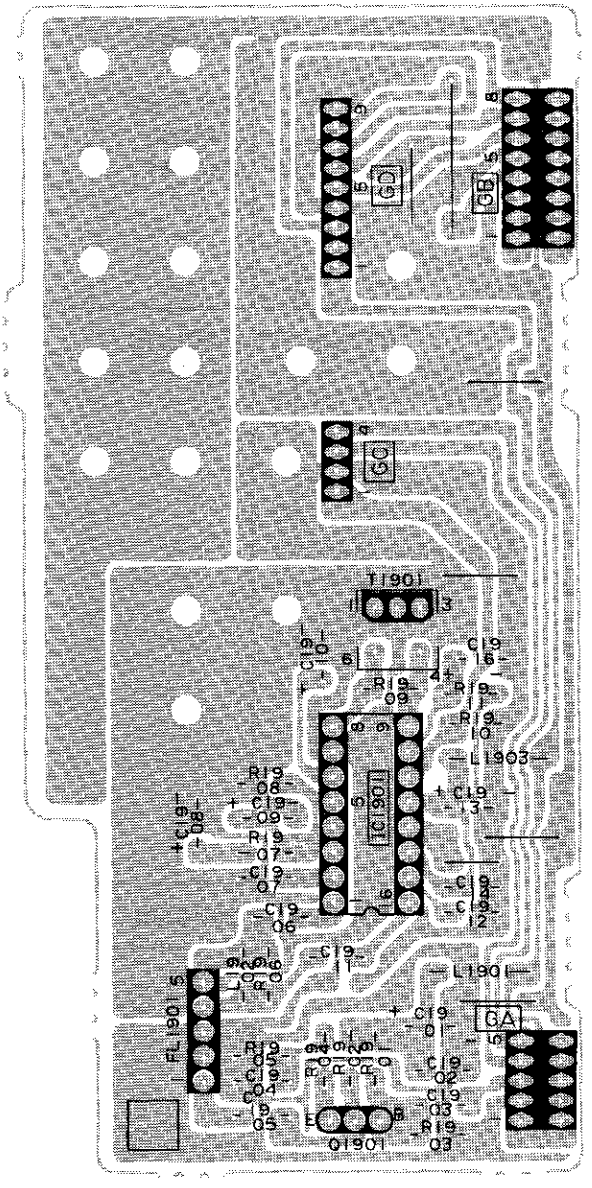
To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER **2. REF. NO.**
3. PART NO. **4. DESCRIPTION**

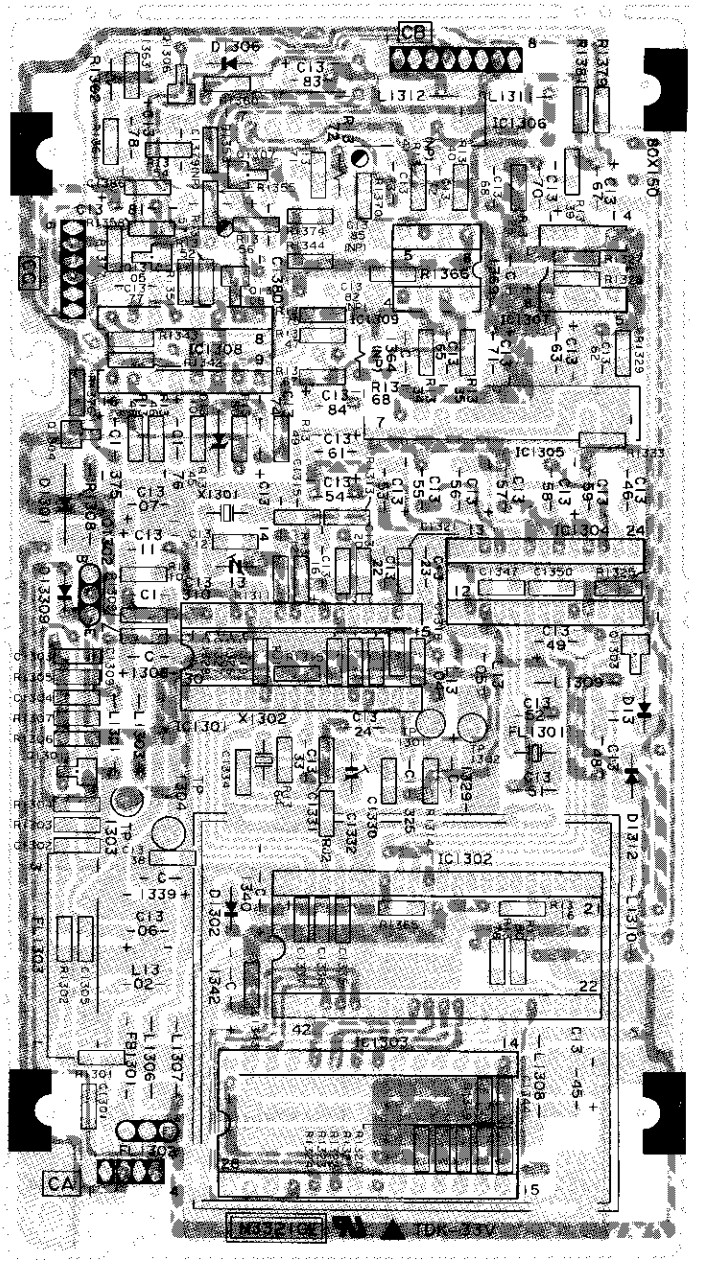
⚠ MARK:SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref.No	Part No.	★	Description	Code
MAIN CIRCUIT				
	DUNTK3410TEV2	J	Main Board Assembly	—
TRANSISTORS				
Q701, 702, 703. 705, 706, 957, 4401	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q704, 1454	VS2C1740SQR1E	J	2SC1740SQR	AC
Q707, 708, 709, 801, 802, 803	VS2SC2412KQ-1	J	2SC2412K	AA
Q710, 958, 961, 6601, 6602	VSDTC144EK/-1	J	DTC144EK	AB
Q804	VS2SC2001LK-1	J	2SC2001	AA
Q951, Q954	VS2SA1020Y/-1	J	2SA1020Y	AD
Q952, 953	VS2SA1271-Y-1	J	2SA1271Y	AB
Q955	VS2SB1117KU1E	J	2SB1117	AE
Q959, 960	VS2SA1013//1E	J	2SA1013	AD
Q962, 965	VSDTC124EK/-1	J	DTC124EK	AB
Q963, 964	VSDTA124EK/-1	J	DTA124EK	AB
Q1553	VS2SD1757KS-1	J	2SD1757KS	AC
Q8801	VSDTA144ES/-1	J	DTA144ES	AB
Q8802	VSDTC144ES/1	J	DTC144ES	AB
INTEGRATED CIRCUITS				
IC701	VHiLA7116//-1	J		AH
IC702, 6601	VHiBA15218N-1	J		AD
IC801	RH-iX0801GEZZ	J		AX
	or			
	RH-iX0802GEZZ	J		AX
IC802	VHiBA6209//1E	J		AG
IC803	VHiPST529D2-1	J		AD
IC951	VHiUPC574JT-1	J		AC
IC1401	VHiNJM2220S-1	J		AG
IC1451	RH-iX0203GEZZ	J		AE
IC2201	VHiBA7021//-1	J		AE
IC6602	VHiAN78N05/-1	J		AF
DIODES AND CRYSTAL				
D702, 703, 704, 705, 706, 707, 708, 801, 802, 803, 952, 953, 955, 958, 959, 964, 1551, 1552, 1553,	RH - DX0053GEZZ	J	1SS132	AA



SIF PWB



NICAM PWB

Ref. No.	Part No.	★	Description	
1554, 2203, 8801				
D960	RH-EX0619GEZZ	J	HZS6.2EB3	AA
	or			
	RH-EX0140GEZZ	J		AA
D961	RH-DX0052GEZZ	J	ERA15-02	AB
D962	RH-EX0676GEZZ	J	HZS33EB3	AA
D963	RH-EX0614GEZZ	U	HZS5.6EB1	—
	or			
	RH-EX0215CEZZ	J		AB
D966	RH-EX0615TAZZ	J	HZ6B1	AA
D2201, 2202, 4401, 4402	RH-EX0646GEZZ	J	HZS15EB2	AA
D8802	RH-EX0647GEZZ	J	RD15E	AA
X801	RCRSB0002CEZZ	J	Crystal	AM

CONTROL

R757	RVR-M4632GEZZ	J	100k Drum P.G. MM Adj.	AB

COILS

L1451	VP-XF120K0000	J	12µH	AB
L2201, 4401	VP-DF221K0000	J	220µH	AB
L4402	VP-LK6R8K0000	J	6.8µH	AB

CAPACITORS

C714	RC-EZ0123GEZZ	J	47µF, 6.3V Electrolytic	AB
C715	VCE9EA1CW475M	J	4.7µF, 16V, 20%, Electrolytic (N.P.)	AB
C716, 740	VCFYHA1HA473J	J	0.047µF, 50V, 5%, Mylar	AB
C722	VCE9EA1HW225M	J	2.2µF, 50V, 20%, Electrolytic (N.P.)	AB
C730, 733, 4401	VCEAEA0JW107M	J	100µF, 6.3V, 20%, Electrolytic	AB
C801, 1563	VCE9EA1HW105M	J	1µF, 50V, 20%, Electrolytic (N.P.)	AC
C953	VCEAGA2AW476M	J	47µF, 100V, 20%, Electrolytic	AC
C1454, 1455, 1552	VCFYHA1HA334J	J	0.33µF, 50V, 5%, Mylar	AC
C1558, 4402, 6612	VCEAEA1CW107M	J	100µF, 16V, 20%, Electrolytic	AC
C4405	VCEA2A0JW477M	J	470µF, 6.3V, 20%, Electrolytic	AB
C4407	VCFYSA1HB473J	J	0.047µF, 50V, 5%, Mylar	AA

MESCELLANEOUS

	RiFU-0575GEZZ	J	IF Pack	AX
	RCNVR0052UMZZ	U	RF Converter	—
	VTUATERB1-011	J	Tuner	AY
	QPLGN0228TAZZ	J	Plug, 2 pin (TP2201)	AB
	QPLGN0328TAZZ	J	Plug, 3 pin (TP1551-TP1553)	AD
	QPLGN0378GEZZ	J	Plug, 3 pin (AC)	AB
	QPLGN0428TAZZ	J	Plug, 4 pin (TP701-TP704)	AB
	QPLGN0528TAZZ	J	Plug, 5 pin (TP6601-TP6605)	AB
	QPLGN0578GEZZ	J	Plug, 5 pin (AB)	AB
	QPLGN0579GEZZ	J	Plug, 5 pin (AI)	AB
	QPLGN0679GEZZ	J	Plug, 6 pin (AX, AV, K6303)	AB
	QPLGN0879GEZZ	J	Plug, 8 pin (AJ, AW, AY)	AB
	QPLGN0979GEZZ	J	Plug, 9 pin (K6301, K6302)	AC
	QPLGN1078GEZZ	J	Plug, 10 pin (AP)	AC
	QPLGN1279GEZZ	J	Plug, 12 pin (K6304)	AC
	QSδCN0694UMZZ	U	Socket, 6 pin (AN)	—
	QSδCN1094UMZZ	U	Socket, 10 pin (AT)	—
	QSδCN1394UMZZ	U	Socket, 13 pin (AD)	—
	QSδCN2194UMZZ	U	Socket, 21 pin (AM)	—
	QSδCZ2136GEZZ	J	Socket, 21 pin	AE
	or			
	QSδCZ2112GEZZ	J	Socket, 21 pin	AF
J6802	QJAKH0002GEZZ	J	Jack	AF

Y/C CIRCUIT

	DUNTK3214TEVA	J	Y/C Board Assembly	—

TRANSISTORS

Q201	VS2SD471-KL1E	J	2SD471	AC
Q207, 209, 502, 503	VS2C1740SQR1E	J	2SC1740SQR	AC
Q208	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q210, 504, 505	VS2SC2412KQ-1	J	2SC2412KQ	AA

Ref. No.	Part No.	★	Description	
Q501	VS2SC2001LK-1	J	2SC2001LK	AA
Q507	VS2SA933SQR1E	J	2SA933SQR	AB
Q509	VSDTC144ES/-1	J	DTC144ES	AB

INTEGRATED CIRCUITS

IC201	VHiAN3248NK-1	J		AP
IC202	VHiLC8992//-1	J		AK
IC501	VHiTA8644N/-1	J		AP
	or			
	VHiMC13544B-1	J		AN

DIODES AND CRYSTAL

D201, 501	RH-EX0615GEZZ	J		AA
D202, 502, 505	RH-DX0053GEZZ	J	1SS132	AA
X501	RCRSB0002CEZZ	J	Crystal	AM

CONTROLS

R201	RVR-M4417GEZZ	J	22k (B) Playback Level Adj.	AB
R202	RVR-M4407GEZZ	J	470 (B) Delay Level Adj.	AB
R203	RVR-B5447CEZZ	J	20k (B) EE Level Adj.	AB
R204	RVR-M4413GEZZ	J	4.7k (B) Deviation Adj.	AB
R205, 206	RVR-M4415GEZZ	J	10k (B) FM Carr. Adj. 10k (B) White Clip Adj.	AB
R208	RVR-B5442CEZZ	J	1k (B) Record Y Level Adj.	AB
R501	RVR-M4380GEZZ	J	100k (B) APC Adj.	AC
R504	RVR-B5443CEZZ	J	2k (B) Record C Level Adj.	AB

COIL AND TRANSFORMERS

DL501	RCiLZ0279GEZZ	J	Delay Line	AQ
FL201	RMPTD0254GEZZ	J	Filter	AG
FL501	RMPTD0239GEZZ	J	Filter	AG
FL502	RCiLV0056GEZZ	J	Filter	AF
L201	VP-XF680K0000	J	68µH	AB
L204, 212	VP-XF560K0000	J	56µH	AB
L205	VP-XF330K0000	J	33µH	AB
L208	VP-XF150K0000	J	15µH	AB
L211, 213	VP-XF151K0000	J	150µH	AB
L214	VP-DF221K0000	J	220µH	AB
L216	VP-XF390K0000	J	39µH	AB
L299	VP-MK820K0000	J	82µH	AB
L501	VP-XF180K0000	J	18µH	AB
L503	VP-XF221K0000	J	220µH	AB
L504	VP-MK221K0000	J	220µH	AB
L505	VP-MK561K0000	J	560µH	AB
L510	VP-XF5R6K0000	J	5.6µH	AB

CAPACITORS

C204	VCE9EA1HW335M	J	3.3µF, 50V, 20%, Electrolytic (N.P.)	AB
C220, 252, 545	VCFYHA1HA104J	J	0.1µF, 50V, 5%, Mylar	AB
C254	VCEAEA0JW107M	J	100µF, 6.3V, 20%, Electrolytic	AB
C509	RC-KZ0011GEZZ	J	0.1µF, 25V, +80%~-20%, Ceramic	AA
C598	VCFYSA1HB473J	J	0.047µF, 50V, 5%, Mylar	AA

MESCELLANEOUS

	QPLGN0329TAZZ	J	Plug, 3 pin (TP501~503)	AB
	QPLGN0778GEZZ	J	Plug, 7 pin (CE)	AC
	QSδCN0679GEZZ	J	Socket, 6 pin (CA, CC)	AC
	QSδCN0879GEZZ	J	Socket, 8 pin (CD, CB)	AC

OPERATION CIRCUIT

	DUNTK3413TEV0	J	Operation Board	

DIODE

D8101	RH-PX0205GEZZ	J	LED	AB

CONTROL

R8102	RVR-B4262GEZZ	J	10k (B) Picture Tone	AD

Ref. No.	Part No.	★	Description	
MISCELLANEOUS				
	QPLGZ0630GEZZ	J	Plug, 6 pin (HA)	AC
SW8102,	QSW-K0079GEZZ	J	Switch, Rewind	AB
8103,			Switch, Stop	
8104,			Switch, Eject	
8105,			Switch, Power	
8106,			Switch, Playback	
8107,			Switch, Fast Forward	
8108,			Switch, Pause	
8109			Switch, Record	
TIMER CIRCUIT				
	DUNTK3412TEV2	J	Timer Board Assembly	—
TRANSISTORS				
Q5001	VS2SA1561Q/1E	J	2SA1561Q	AC
Q5002	VSDTC124ELT-1	J	DTC124EL	AA
INTEGRATED CIRCUITS				
IC5001	RH-iX0589GEZZ	J		AW
IC5002	VHiPST529i2-1	J		AD
IC5003	VHiCAT93C46-1	J		AN
IC5004	VHiMSC1195S-1	J		AP
DIODES AND CRYSTAL				
D5001,	RH-DX0053GEZZ	J	1SS132	AA
5002,				
5003,				
5005,				
5011,				
5012,				
5017,				
5019,				
5020,				
5021,				
5023,				
5024				
D5004	RH-EX0630GEZZ	J	HZS9.1E	AA
X5001	RCRSB0090GEZZ	J	Crystal	AE
CONTROLS				
R5018,	RVR-M4419GEZZ	J	4.7k (B) Level Meter Adj. (L)	AB
5019			4.7k (B) Level Meter Adj. (R)	

Ref. No.	Part No.	★	Description	
COIL AND FILTER				
FL5001	RFiLC0073GEZZ	J	Filter	AD
L5001	VP-DF101K0000	J	100µH	AB
CAPACITORS				
C5013,	VCEAEA0JW227M	J	220µF, 6.3V, 20%, Electrolytic	AC
5016				
C5017	VCEA2A0JW477M	J	470µF, 6.3V, 20%, Electrolytic	AB
C5022	VCFYHA1HA473J	J	0.047µF, 50V, 5%, Mylar	AB
MISCELLANEOUS				
DG5001	VVKBG808GK/-1	J	Fluorescent display tube	AY
	QPLGN0380GEZZ	J	Plug, 3 pin (TC)	AB
	QPLGN0580GEZZ	J	Plug, 5 pin (TE)	AB
	QSδCN1095UMZZ	U	Socket, 10 pin (TA)	—
	QSδCN1395UMZZ	U	Socket, 13 pin (TB)	—
	QSδCZ0630GEZZ	J	Socket, 6 pin (TD)	AC
	RRMCU0037GEZZ	J	R/C Receiver	AL
SW5001,	QSW-K0079GEZZ	J	Switch, Clock	AB
5002,			Switch, Tracking (+)	
5003,			Switch, Tracking (−)	
5004,			Switch, Preset	
5005,			Switch, MT (+)	
5006,			Switch, MT (−)	
5007,			Switch, All clear	
5008,			Switch, Colour	
5009,			Switch, DPSS (+)	
5010			Switch, DPSS (−)	
SW5018	QSW-S0193GEZZ	J	Switch, Nicam	AC
SiF CIRCUIT				
	DUNTK3505TEV0	J	Sif Board Assembly	—
TRANSISTOR				
Q1901	VS2SC1906//1E	J	2SC1906	AC
INTEGRATED CIRCUIT				
IC1901	RH-iX0028PAZZ	J		AQ

Ref. No.	Part No.	★	Description	
COILS AND FILTER				
FL1901	RFiLC0101GEZZ	J	Filter	AK
T1901	RCiLD0176CEZZ	J	Detection coil	AD
L1901, 1903	VP-DF8R2K0000	J	J8.2µH	AB
L1902	VP-XF3R3K0000	J	3.3µH	AB
TRANSISTOR				
	QPLGN0478GEZZ	J	Plug, 4 pin (GC)	AB
	QSδCN0579GEZZ	J	Socket, 5 pin (GA)	AC
	QSδCN0879GEZZ	J	Socket, 8 pin (GB)	AC
	QPLGN0978GEZZ	J	Plug, 9 pin (GD)	AC
NiCAM CIRCUIT				
	DUNTK3321TEV0	J	NiCAM Board Assembly	—
TRANSISTORS				
Q1301, 1307	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q1302	VS2SD468-C/-1	J	2SD468	AD
Q1303	VSDTC144EK/-1	J	DTC144EK	AB
Q1304, 1305	VS2SD1757KS-1	J	2SD1757KS	AC
Q1308	VSDTA144EK/-1	J	DTA144EK	AC
INTEGRATED CIRCUITS				
IC1301	VHiTA8662N/-1	J		AZ
IC1302	VHiTC6011N/-1	J		BD
IC1303	VHiM5165P10-1	J		AV
IC1304	VHiTD6710AN-1	J		AT
IC1305, 1306	RH-iZ0167GEZZ	J		AQ
IC1307	VHiUPC358C/-1	J		AD
IC1308	VHiTC4052BP-1	J		AN
IC1309	VHiiR94558/-1	J		AF

Ref. No.	Part No.	★	Description	
DIODES AND CRYSTALS				
D1301	RH-EX0638GEZZ	U	HZS11E1B3	—
D1302, 1309, 1311, 1312	RH-DX0053GEZZ	J	1SS132	AA
D1310	RH-EX0620GEZZ	J	HZS6.8EB1	AA
X1301	RCRSB0131CEZZ	J	Crystal	AH
X1302	RCRSB0132CEZZ	J	Crystal	AH
CONTROLS				
R1357	RVR-M4165GEZZ	J	10k (B) Mono Level Adj.	AB
R1362, 1368, 1372	RVR-M4166GEZZ	J	15k (B) Mono Level Adj. 15k (B) R-Ch Level Adj. 15k (B) L-Ch Level Adj.	AB
COILS AND TRANSFORMERS				
FL1301	RFiLA0043CEZZ	J	Filter	AE
FL1302	RFiLN0013GEZZ	J	Filter	AC
FL1303	RFiLC0194CEZZ	J	Filter	AM
L1302	VP-MK180K0000	J	18µH	AB
L1304, 1305	VP-MK681K0000	J	680µH	AB
L1306	VP-DF330K0000	J	33µH	AB
L1308, 1309, 1310	VP-DF221K0000	J	220µH	AB
CAPACITORS				
C1322, 1323, 1324, 1325, 1362, 1365, 1368, 1373	VCFYHA1HA104J	J	0.1µF, 50V, 5%, Mylar	AB
C1346, 1353	RC-QZA681TAYJ	J	680pF, 50V, 5%, Mylar	AA
C1355	VCEAEA0JW107M	J	100µF, 6.3V, 20%, Electrolytic	AB

Ref. No.	Part No.	★	Description	
C1357	VCEAEA0JW227M	J	220µF, 6.3V, 20%, Electrolytic	AC
C1364, 1372, 1379, 1382, 1385	VCE9EA1CW226M	J	22µF, 16V, 20%, Electrolytic (N.P.)	AC
TRIMMERS				
C1313	RTδ-H0010TAZZ	J	Oscillation Adj.	AE
C1332	RTδ-H1048GEZZ	J	Oscillation Adj.	AC
MISCELLANEOUS				
	QPLGN0478GEZZ	J	Plug, 4 pin (CA)	AB
	QPLGN0578GEZZ	J	Plug, 5 pin (CC)	AB
	QPLGN0878GEZZ	J	Plug, 8 pin (CB)	AC

HiFi MODULE CIRCUIT

	RUNTK0601GEZZ	J	HiFi Module Board Assembly	—
TRANSISTORS				
Q6301	VS2SC3939R/-1	J	2SC3939	AD
Q6302, 6319, 6320, 6323	VSDTC124EK/-1	J	DTC124EK	AB
Q6303, 6304, 6312	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q6306	VSDTA124EK/-1	J	DTA124EK	AB
Q6313, 6316, 6317	VS2SD1328-S-1	J	2SD1328	AB
INTEGRATED CIRCUITS				
IC6302	VHiBA7755//-1	J		AD
IC6303	VHiAN3976FB-1	J		AU
IC6304	VHiAN3316K/-1	J		AG

Ref. No.	Part No.	★	Description	
DIODE				
D6301	VHDMA151K//-1	J		AB
CONTROLS				
R6305	98MVZ066HB504	J	500k (B) Bias Adj.	AC
R6328	98MVZ066HB202	J	2k (B) Normal PB Level Adj.	AB
R6353, 6359	98MVZ066HB502	J	5k (B) E-E Level R ch Adj. 5k (B) E-E Level L ch Adj.	AB
R6357	98MVZ066HB303	J	30k (B) R/P Level R ch Adj.	AB
R6363	RVR-M4338GEZZ	J	30k (B) R/P Level L ch Adj.	AB
R6365	98MVG066HB105	J	5k (B) Metal R ch Adj.	AB
R6367	98MVZ066HB102	J	1k (B) BPF Adj.	AB
R6371	RVR-M4341GEZZ	J	50k (B) DOC Level Adj.	AB
R6374	RVR-M4371GEZZ	J	10k (B) Metal L ch Adj.	AC
COILS AND TRANSFORMER				
FL6301	RCiLi0060GEZZ	J	Filter	AD
T6301	RTRNH0053GEZZ	J	Oscillator	AE
L6301	VP-ZK220J0000	J	220µH	AB
L6302	VP-YF822J0000	J	8.2mH	AC
L6303	VP-ZK101J0000	J	100µH	AB
L6304, 6306	VP-DF331J0000	J	330µH	AB
L6305, 6307	VP-DF221J0000	J	220µH	AB
CAPACITORS				
C6305	VCQPKA2AA562J	J	0.0056µF, 100V, 5%, Mylar	AB
C6315, 6328	RC-QZA153TAYJ	J	0.015µF, 50V, 5%, Mylar	AB
C6323	RC-QZA222TAYJ	J	0.0022µF, 50V, 5%, Mylar	AB
C6324	RC-QZA822TAYJ	J	0.0082µF, 50V, 5%, Mylar	AB
C6325	RC-QZA152TAYJ	J	0.0015µF, 50V, 5%, Mylar	AB
C6340, 6354	VCFYSA1HB473J	J	0.047µF, 50V, 5%, Mylar	AA
C6344, 6356	VCFYSA1HB333J	J	0.033µF, 50V, 5%, Mylar	AE
C6345, 6358	VCE9EA1CW106M	J	10µF, 16V, 20%, Electrolytic (N.P.)	AC
C6347, 6359	VCE9EA1HW105M	J	1µF, 50V, 20%, Electrolytic (N.P.)	AC
C6348, 6360	RC-QZA103TAYJ	J	0.01µF, 50V, 5%, Mylar	AB
C6361	VCEAGA1CW107M	J	100µF, 16V, 20%, Electrolytic	AB
C6365, 6374	RC-QZA102TAYJ	J	0.001µF, 50V, 5%, Mylar	AB

Ref. No.	Part No.	★	Description	
MISCELLANEOUS				
	QPLGN0229TAZZ	J	Plug, 2 pin (TP6303, TP6304)	AB
	QPLGN0378GEZZ	J	Plug, 3 pin (BB)	AB
	QPLGN0478GEZZ	J	Plug, 4 pin (BE)	AB
	QPLGN0578GEZZ	J	Plug, 5 pin (BA)	AB
	QSδCN0679GEZZ	J	Socket, 6 pin (K6303)	AC
	QSδCN0979GEZZ	J	Socket, 9 pin (K6301, K6302)	AB
	QSδCN1279GEZZ	J	Socket, 12 pin (K6304)	AC
HEAD AMP CIRCUIT				
	DUNTK2948TEV4	J	Head Amp. Board Assembly	—
TRANSISTORS				
Q301	VS2SC2059KN1E	J	2SC2059KN	AC
Q302	VS2SC2412KQ-1	J	2SC2412KQ	AA
INTEGRATED CIRCUIT				
IC301	VHiBA7252S/-1	J		AH
COILS				
L303	VP-DF101K0000	J	100µH	AB
L304	VP-XF680K0000	J	68µH	AB
L305	VP-XF470K0000	J	47µH	AB
L307	VP-XF220K0000	J	22µH	AB
L309	VP-XF151K0000	J	150µH	AB
L399	VP-δF1R5K0000	J	1.5µH	AC
CAPACITORS				
C302, 305	VCFYSA1JA104J	J	0.1µF, 63V, 5%, Mylar	AC
C309	VCFYSA1JA473J	J	0.047µF, 63V, 5%, Mylar	AC
MISCELLANEOUS				
	QPLGN0229TAZZ	J	Plug, 2 pin (TP301, 302)	AB
	QPLGN0780GEZZ	J	Plug, 7 pin (XA)	AC
	QSδCN0532REZZ	J	Socket, 5 pin (ZA)	AB

Ref. No.	Part No.	★	Description	
POWER CIRCUIT				
	RDENT0416UMZZ	J	Power Board Assembly	—
TRANSISTORS				
⚠Q901, ⚠ 902	95KUAD0088AC	J	2SD1565	AF
⚠Q903	95KUAC0004AZ	J	2SC945	AC
INTEGRATED CIRCUIT				
⚠IC901	95KUCB0029AZ	J		AK
DIODES				
⚠D901, ⚠ 902, ⚠ 903, ⚠ 904, ⚠ 908, ⚠ 909, ⚠ 910, ⚠ 911, ⚠ 913, ⚠ 914, ⚠ 915, ⚠ 916, ⚠ 917, ⚠ 918, ⚠ 919, ⚠ 920	95KUBC0112AZ	J	11E1	AB
D905, 906	95KUBA0004AZ	J	1SS53	AC
D907	95KUBDAC8R2C	J	RD8.2ESAB2	AB
D912	95KUBDAC6R2B	J	RD6.2ESAB1	AB
⚠D921	95KUBC0150BZ	J	11ES2	AB
CONTROL				
VR901	95KUFBA102CM	J	1k (B)	AC
TRANSFORMER				
⚠T901	95K116035126	J	Power Transformer (PT2665)	BB

Ref. No.	Part No.	★	Description	
CAPACITORS				
C902, C903	95KUGZ0618ZZ	J	2200µF, 35V, Electrolytic	AH
C904	95KUGZ0708ZZ	J	2200µF, 25V, Electrolytic	AF
C905	95KUGAC222FE	J	2200µF, 16V, Electrolytic	AF
C906	95KUGAJ470BU	J	47µF, 100V, Electrolytic	AF
RESISTORS				
⚠R901, ⚠ 902	95KUECC685AB	J	6.8M ohm, 1/2W, Solid	AB
⚠R903, ⚠ 907	95KUEBBR27AF	J	0.27 ohm, Fuse Resistor	AC
⚠R904, ⚠ 905, ⚠ 906	95KUEBBR68AC	J	0.68 ohm, Fuse Resistor	AC
⚠PR901	95KUZZ0033ZZ	J	8.2 ohm, Thermistor	AF
MISCELLANEOUS				
⚠	QACCB9020UMZZ	U	AC Cord, 240V / 50Hz	—
⚠F901	95KPJCTB1001	J	T1A, 250V	AD
OA	95KPKZ0194ZZ	J	Plug, 3 pin	AC
PA	95KPKZ0450ZZ	J	Flat Cable, 10 pin	AD
PB	95KECB7434ZZ	J	Plug, 3 pin	AF
INFRARED REMOTE CONTROL CIRCUIT				
	RRMCG0669UMSA	U	Infrared Remote Control Unit	—
TRANSISTORS				
Q1	92P3TSP0005T	U	2SB1132	—
INTEGRATED CIRCUIT				
IC1	92P3SQ00324W	U	MN1584532	—
DIODE AND CRYSTALS				
IED1	92P3QH00032	U	SLR938C-7	—
X1	92P3EQ00010	U		—
CF1	92P3TEF0002T	U		—

Ref. No.	Part No.	★	Description	
CABINET PARTS				
1	92PFA11G9001	U	Cabinet (A)	—
2	92PFA11G9101	U	Cabinet (B)	—
3	92PFA11G9201	U	Battery cover	—
4	92PFA42C5409	U	Rubber key	—
5	92PFA62D0214	U	indication plate	—
7	92P3ETFD0601	U	Battery terminal (+)	—
8	92P3ETFD0701	U	Battery terminal (−)	—
9	92P3ETFD0801	U	Battery terminal (+,−)	—
10	92P2A461080	U	Screw	—
11	92P3ELFA147	U	LCD	—
12	92P3ECFA0048	U	Connector	—
THE OTHER PARTS				
	TiNS-1728UMZZ	U	Operation manual	—
	QCNW2702GEZZ	J	Antenna cord	AK
	QCNW-6096GEZZ	J	Audio cable	AK
MECHANISM CHASSIS PARTS				
1	PGiDS0023GEFW	J	Retaining Guide	AE
2	MSPRC0142GEFJ	J	Retaining Guide Spring	AA
3	MLEVC0022GEZZ	J	Half-Loading Lever	AF
4	MSPRT0270GEFJ	J	Half-Loading Lever Spring	AA
5	MLEVF0284GEFW	J	Half-Loading Drive Lever	AC
6	MSPRT0269GEFJ	J	Half-Loading Reciprocating	AA
7	MLEVF0283GEZZ	J	Half-Loading Reciprocating Lever	AB
8	MSPRC0144GEFJ	J	Azimuth Spring	AA
9	RHEDU0070GEZZ	J	Audio/Control Head Ass'y	AS
10	PCAPS1015GEZZ	J	Retaining Guide Cap	AA
11	QPWBF2888GEZZ	J	Audio/Control Head PWB	AB
12	MLEVF0292GEZZ	J	Audio/Control Head Arm	AD
13	MSPRD0087GEFJ	J	Audio/Control Head Arm Spring	AA
14	LHLDZ1606GEZZ	J	Loading Block Holder Ass'y	AC
15	QPRBF2886GEZZ	J	Loading Block PWB	AD
16	RMδTM1049GEZZ	J	Loading Motor	AM
17	QPLGN0529TAZZ	J	Plug, 5 Pin	AB
18	QSW-R0026GEZZ	J	Cam Switch	AE
19	NGERW1032GEZZ	J	Worm Wheel	AC
20	NPLYV0133GEZZ	J	Loading Motor Pulley	AC
21	NBLTK0058GE00	J	Loading Motor Belt	AA
22	NGERW1031GEZZ	J	Worm Ass'y	AC
23	NSFTG0045GEFJ	J	Worm Shaft	AB
24	NGERH1129GEZZ	J	Master Cam	AC
25	MLEVF0281GEZZ	J	Pinch Roller Lever Ass'y	AN
26	MLEVF0290GEZZ	J	Relay Shifter Lever	AE

Ref. No.	Part No.	★	Description		Ref. No.	Part No.	★	Description	
27	MLEVC0023GEZZ	J	Reverse Guide	AG	79	NSFTL0563GEFW	J	Supply Impedance Roller Innor	AC
28	MSPRD0086GEFJ	J	Reverse Guide Spring	AA					
29	RMδTN2028GEZZ	J	Capstan D. D. Motor	AZ	80	PGiDH0031GEFW	J	Supply Impedance Roller Flange	AA
30	MLEVP0136GEZZ	J	Slow Brake Lever	AA					
31	MSPRT0276GEFJ	J	Slow Brake Spring	AA	81	NRδLP0084GEZZ	J	Supply Impedance Roller	AC
32	MSPRC0151GEFJ	J	Reverse Guide Spring	AA	82	RHEDT0026GEZZ	J	Full Erase Head Ass'y	AK
33	MLEVF0289GEZZ	J	Relay Gear Drive Lever	AE	83	QPWBF2936GEZZ	J	Full Erase Head PWB	AA
34	MSLiF0043GEZZ	J	Brake Shifter	AK	84	LANGA0054GEZZ	J	Supply Reel Holder Angle Ass'y	AD
35	NSFTZ0068GEFD	J	Brake Lock Shaft	AC					
36	MSPRC0143GEFJ	J	Absorber Plate Spring	AB	85	NBLTK0059GE00	J	Reel Belt	AB
37	MSPRT0274GEFJ	J	Video Search Spring	AB	86	MLEVP0146GEZZ	J	Auxiliary Fast Forward Brake Lever	AE
38	MLEVP0181GEZZ	J	Video Search Brake Lever	AA					
39	MLEVP0131GEZZ	J	Video Search Reciprocating Lever	AC	87	MSPRT0282GEFJ	J	Auxiliary Fast Forward Brake Spring	AB
40	RPLU-0083GEZZ	J	Brake Solenoid Ass'y	AF	90	PGiDC0039GEFW	J	Drum Base	AL
41	NDAiV1046GEZZ	J	Take-up Reel Disk Ass'y	AG	91	DDRMW0011HE00	J	Drum Ass'y	BU
42	NGERH1128GEZZ	J	Idler Gear Ass'y	AN	92	QBRSK0021GEZZ	J	Earth Brush Ass'y	AC
43	NPLYV0134GEZZ	J	Reel Pulley	AC	93	RMδTP1102GEZZ	J	Drum D. D. Motor Ass'y	AW
44	MSPRD0085GEFJ	J	Shifter Spring	AB	94	LANGT9105GEFW	J	Heater Angle	AC
45	PCδVP1018GEZZ	J	Shifter Spring Cover	AC	95	VHiM5F7805L-1	J	3-terminal Regulator	AE
46	LHLDP1092GEZZ	J	Cassette LED Holder	AE	97	QCNW-5969GEZZ	J	Full Flat Cable Capstan (D. D. Motor and Drum D. D. Motor)	AM
47	RH – PX0180GEZZ	J	Cassette LED	AD					
48	QPWBF2977GEZZ	J	Reel Sensor PWB	AK					
49	RH – PX0181GEZZ	J	Reel Sensor	AE	99	RDTCH0018GEZZ	J	Dew Senser	AG
50	LCHSS0016GEZZ	J	Reel Block Chassis	AL	100	QSδCN0534REZZ	J	Socket, 5 Pin	AC
51	MLEVP0134GEZZ	J	Tension Adjusting Lever	AC	101	VRS-TW2ED221J	J	220 ohm, 1/4W, 5%, Oxide Film	AA
52	MLEVP0195GEZZ	J	Tension Release Lever	AC					
53	MLEVP0132GEZZ	J	Back Tension Lever	AC	102	VCKYTV1HB102K	J	0.001µF, 50V, 10%, Ceramic	AA
54	MSPRT0273GEFJ	J	Spring, Fast Forward	AB					
55	NDAiV1047GEZZ	J	Supply Reel Disk Ass'y	AH	103	VRS-TV1JD473J	J	47k ohm, 1/10W, 5%, Oxide Film	AA
56	MSPRT0272GEFJ	J	Main Brake Spring	AC					
57	MLEVP0135GEZZ	J	Intermediate Lever	AC	105	LANGA0051GEFW	J	Take-up Reel Disk Catch Holder	AB
58	MLEVP0129GEZZ	J	Main Take-up Brake Lever	AE					
59	MLEVP0128GEZZ	J	Main Supply Brake Lever	AE	107	LANGF7061GEZZ	J	Release Pin Angle Ass'y	AC
60	NGERH1121GEZZ	J	Loading Relay Gear	AA	108	PGiDS0027GEZZ	J	Supply Impedance Roller Flange L	AA
61	MSPRT0271GEFJ	J	Loading Reciprocating Spring	AA	109	PCAPS1018GEZZ	J	Slow Brake Shaft Cap	AA
62	NGERH1120GEZZ	J	Take-up Loading Gear	AA	120	CCHSS0018GE02	J	Reel Block Ass'y	AZ
63	MLEVF0304GEZZ	J	Take-up Loading Arm Ass'y	AC	121	VCKZPA1HF103Z	J	0.01µF, 50V, +80% ~ –20%, Ceramic	AA
64	NGERH1119GEZZ	J	Supply Loading Gear	AA	135	94SSEE559421A	J	Drum D.D. Motor IC	AU
65	MLEVF0303GEZZ	J	Supply Loading Arm Ass'y	AC	136	94SSEE551121A	J	Capstan D.D. Motor IC	AU
					137	PSPAZ0270GEZZ	J	Inertia Moment Plate	AB
66	LCHSM0108GEZZ	J	Main Chassis Ass'y	AR					
67	LBNDK1002GEZZ	J	Tension Band Ass'y	AD					
68	LHLDZ1607GEZZ	J	Tension Spring Hook Plate	AA					
69	MSPRT0275GEFJ	J	Tension Spring	AA					
70	MLEVF0291GEZZ	J	Tension Arm Ass'y	AF					
72	MSLiF0049GEFW	J	Take-up Pole Base Slider	AB					
73	LPδLM0037GEZZ	J	Take-up Pole Base Ass'y	AG					
74	NRδLP0062GEZZ	J	Guide Roller Ass'y	AE					
75	MSLiF0048GEFW	J	Supply Pole Base Slider	AB					
76	LPδLM0036GEZZ	J	Supply Pole Base Ass'y	AG					
77	PGiDM0066GEZZ	J	Take-up Loading Rail	AB					
78	PGiDM0067GEZZ	J	Supply Loading Rail	AB					

CASSETTE HOUSING CONTROL PARTS

Ref. No.	Part No.	★	Description	
	CHLDX3052GE51	J	Cassette Housing Control Assembly	AY
301	PGiDM0069GE00	J	Down Guide	AC
302	QSW–F0034GEZZ	J	Cassette Erase Protection Switch	AC
303	LHLDX1014GE00	J	Cassette Housing Frame (Right)	AC
304	MARMP0043GE00	J	Cassette Cover Arm (A)	AA
305	MARMP0044GE00	J	Cassette Cover Arm (B)	AA
306	NGERW1036GEZZ	J	Phase Gear	AA
307	MSPRT0290GEFJ	J	Cassette Cover Arm Reciprocating Spring	AA
308	MSPRD0088GEFJ	J	Drive Gear Spring (Right)	AA
309	NGERW1034GEZZ	J	Drive Gear (Right)	AB
310	MSPRT0277GEFJ	J	Reciprocating Spring	AA
311	NGERW1033GEZZ	J	Worm Wheel Gear	AB
312	LANGF9355GEFW	J	Worm Bracket	AB
313	NBRGP0013GEZZ	J	Bearing	AA
314	MLEVP0142GE00	J	Open Lever	AA
315	MSPRD0091GEFJ	J	Open Lever Spring	AA
316	MLEVP0141GEZZ	J	Switching Lever	AA
317	MSPRT0280GEFJ	J	Switching Lever Spring	AA
318	NSFTD0016GEZZ	J	Worm Shaft Ass'y	AE
319	MLEVP0140GEZZ	J	Clutch Lock Lever	AA
320	MSPRT0279GEFJ	J	Clutch Lock Lever Spring	AA
321	MLEVP0139GEZZ	J	Clutch Release Lever	AA
322	MSPRD0092GEFJ	J	Clutch Release Lever Spring	AA
323	MLEVP0138GEZZ	J	Clutch Lever	AA
324	NPLYV0135GEZZ	J	Pulley	AA
325	NBLTK0060GE00	J	Cassette Loading Belt	AB
326	LANGF9354GEFW	J	Upper Plate	AD
327	LHLDX1011GE00	J	Slider Holder (Left)	AB
328	MSPRP0097GEFJ	J	Cassette Spring	AA
329	LANGF9357GEFW	J	Slider Lock Lever (Left)	AA
330	MSPRT0281GEFJ	J	Slider Lock Spring	AA
331	MSLi F0044GEFW	J	Slider	AF
332	MARMP0039GEZZ	J	Lock Release Lever Ass'y	AA
333	MLEVP0137GE00	J	Lock Release Lever	AA
334	MLEVP0143GE00	J	Slider Lock Cover	AA
335	LANGF9356GEFW	J	Slider Lock Lever (Right)	AA
336	LHLDX1010GE00	J	Slider Holder (Right)	AB
337	NGERW1035GEZZ	J	Drive Gear (Left)	AB
338	MSPRD0089GEFJ	J	Drive Gear Spring (Left)	AA
339	LHLDX1015E00	J	Cassette Housing Frame (Left)	AC
340	NSFTD0015GEFD	J	Main Shaft	AD
341	QPWBF2894GEZZ	J	End Sensor PWB	AB
342	RH-PX0176GEZZ	J	Phototransistor	AE
343	QPWBF3194GEZZ	J	Start Sensor PWB	AC
344	QSW-F0040GEZZ	J	Cassette Switch	AD
345	ZTAPEZ790008E	J	Rubber Mat	AA
347	QSöCN0595GEZZ	J	Socket, 5 Pin	AB
348	VSDTC124F//-1	J	Transistor, DTC124F	AC
349	VS2SA937-Q/-1	J	Transistor	AC
350	VRD-RA2BE153J	J	15k ohm, 1/8W, 5%, Carbon	AA
351	VRD-RA2BE223J	J	22k ohm, 1/8W, 5%, Carbon	AA
352	VRD-RA2BE103J	J	10k ohm, 1/8W, 5%, Carbon	AA
353	VRD-RA2BE472J	J	4.7k ohm, 1/8W, 5%, Carbon	AA
354	VRD-RA2BE332J	J	3.3k ohm, 1/8W, 5%, Carbon	AA
355	RC-KZ0028GEZZ	J	0.047µF, 16V, 20%, Ceramic	AA
356	QCNW-4789GEZZ	J	Connecting Cord	AF
401	LX-WZ1020GE00	J	Cut Washer (4.2W-6.0-0.5)	AA
402	LX-HZ3046GEFD	J	Screw	AA

SCREWS, NUTS, WASHERS AND WIRE CLAMP

Ref. No.	Part No.	★	Description	
201	XNFSD20-16000	J	Adjusting Nut	AA
202	XWHSD26-05060	J	Washer W2.6S-6-0.5	AA
203	XRESJ20-04000	J	E Ring-2	AA
204	LX-BZ3095GEFD	J	A/C Head Screw	AA
205	XBPSD26P06000	J	Azimuth Adjusting Screw	AA
206	LX-BZ3096GEFD	J	Tilt Adjusting Screw	AA
207	XNFSD40-31000	J	Adjusting Nut (A/C Head)	AB
208	LX-WZ1048GEZZ	J	Washer W3.1-5.4-0.5	AA
209	LX-WZ1041GE00	J	Washer W2.6-6-0.5 (LM)	AA
210	XHPSD26P06WS0	J	Screw C2.6P + 6S	AA
211	XRESJ30-06000	J	E Ring-3	AA
212	XWHJZ45-02060	J	Washer W4.5P-6-0.25	AA
213	LX-NZ3046GEFW	J	Adjusting Nut	AB
215	LX-WZ1003GE00	J	Washer CW2-5-0.5	AA
216	XRESJ12-03000	J	E Ring-1.2	AA
217	XHPSD26P03000	J	Screw S2.6P + 3S	AA
218	XHPSD20P03000	J	Screw 2P + 3S	AA
219	XRESJ25-04000	J	E Ring-2.5	AA
220	XWHJZ25-05050	J	Washer W2.6P-5-0.5	AA
221	XWHJZ25-01050	J	Washer W2.6P-5-0.13	AA
222	XWHJZ25-02050	J	Washer W2.6P-5-0.25	AA
223	LX-HZ3043GEZZ	J	Screw W2.6P + 6S	AA
224	LX-BZ3099GEZZ	J	Screw WSW2P + 11S (W5)	AB
225	LX-XZ3030GEFD	J	Screw M2 × 4	AC
226	XHPSD26P08WS0	J	Screw C2.6P + 8S	AA
227	XJBSD26P08WS0	J	B Tight Screw C2.6P + 8S	AA
228	XHPSD30P08WS0	J	Screw C3P + 8S	AA
229	LX-WZ1040GE00	J	Washer CW2.5-6-0.5	AA
230	XJBSD20P06000	J	B Tight Screw 2P + 6S	AA
232	LX-HZ3056GEFD	J	Screw WSW3P + 10S-6W	AA

Ref. No.	Part No.	★	Description	
233	XBPSD30P08J00	J	Screw SW3P + 8S	AA
234	XBPSD26P12J00	J	Screw SW2.6P + 12S	AA
235	XBPSD30P05J00	J	Screw SW3P + 5S	AA
236	XBPSD30P06J00	J	Screw SW3P + 6S	AA
237	XHPSD30P06000	J	Screw S3P-6S	AA
238	LX-RZ3001AEZZ	J	E Ring-3	AA
239	LX-WZ1042GE00	J	Washer CW2.7-7-0.5	AA
242	XWHJZ25-04050	J	Washer W2.6P-5-0.4	AA
244	XHPSD30P04WS0	J	Screw C3P + 4S	AA

MECHANICAL PARTS

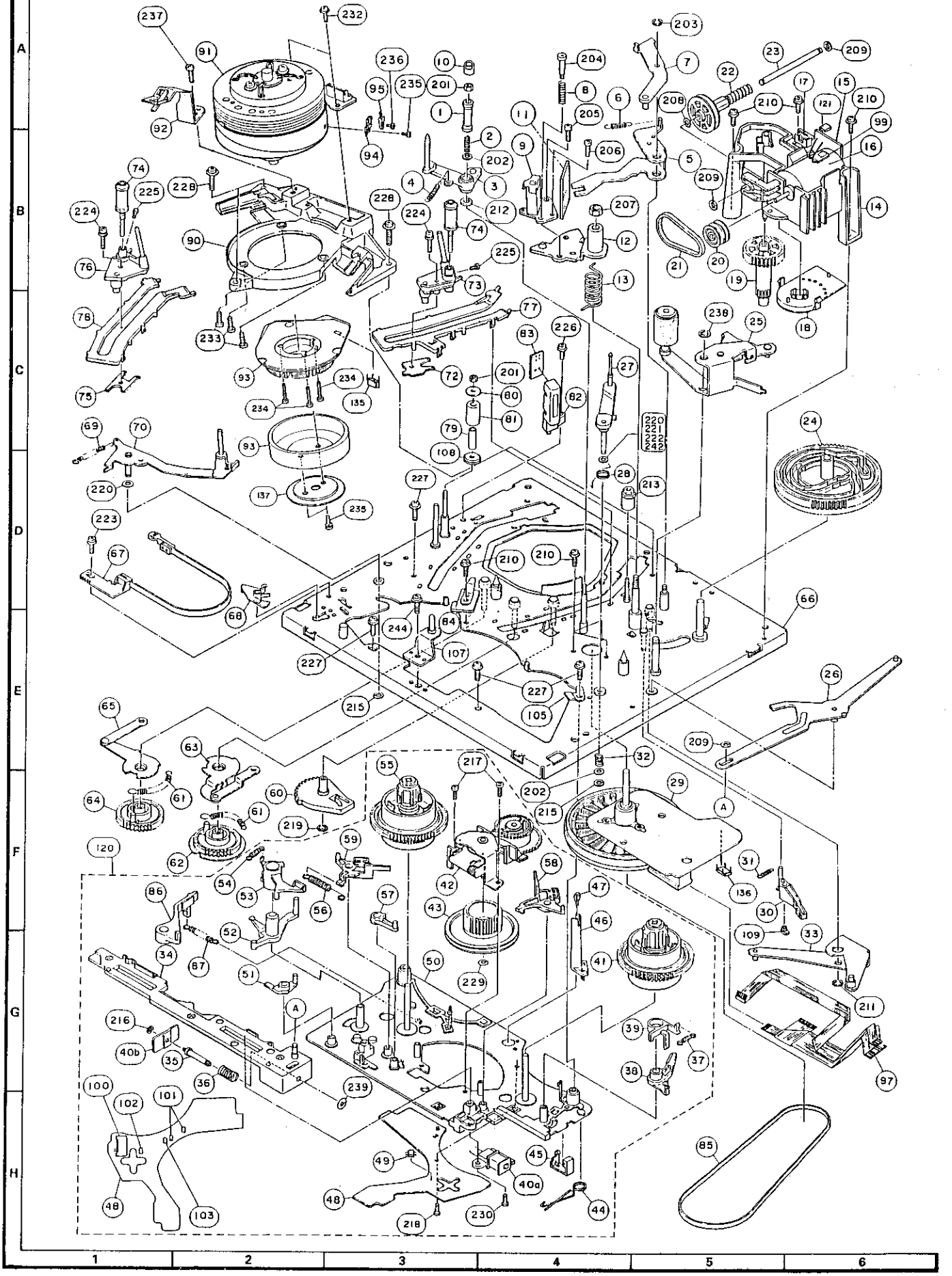
601-1	GCABB1081UMZZ	U	Bottom Cabinet	—
601-2	GBDYU3052UMZZ	U	Bottom Plate	—
601-3	QEARP0276UMFW	U	Earth Plate,	—
601-4	LX-HZ3047GEFF	J	Screw	AA
602	CCABA3046TEV2	U	Upper Cabinet Ass'y	—
602-1	TLABS0002UMZZ	U	Caution label	—
602-2	GCABA3046UMSδ	U	Upper Cabinet	—
604	GCδVA1614UMZZ	U	Antenna Terminal Cover	—
607	LHLDZ1609UMZZ	U	PWB Holder	—
609	MSPRC0145UMFJ	U	Power Earth Spring	—
610	XEBSD30P12000	J	Screw	AA
611	XHPSD30P06WS0	J	Screw	AA
612	XEBSD40P12000	J	Screw	AA
614	LX-HZ3040GEFF	J	Screw, Top Cabinet	AA
615	LHLDP1105GE00	J	Power LED Holder	AB
617	LHLDZ1706GEZZ	J	Holder, Fluorescent Display tube	AD
619	GLEGP9029GEZZ	J	Rear Foot	AB
620	CLEGP9027GE07	J	Pad	AF
621	CLEGP9026GE07	J	Pad	AF
624	LHLDZ1727GEZZ	J	Holder	AC
625	TLABM0074UMZZ	U	Model Label	—
626	LHLDZ1624UMZZ	U	Holder	—
630	PSPAZ0202GEZZ	J	Spacer	AC
631	LHLDF1033GEZZ	J	Holder	AA
632	LANGF7074GEFW	J	Angle	AF

Ref. No.	Part No.	★	Description	

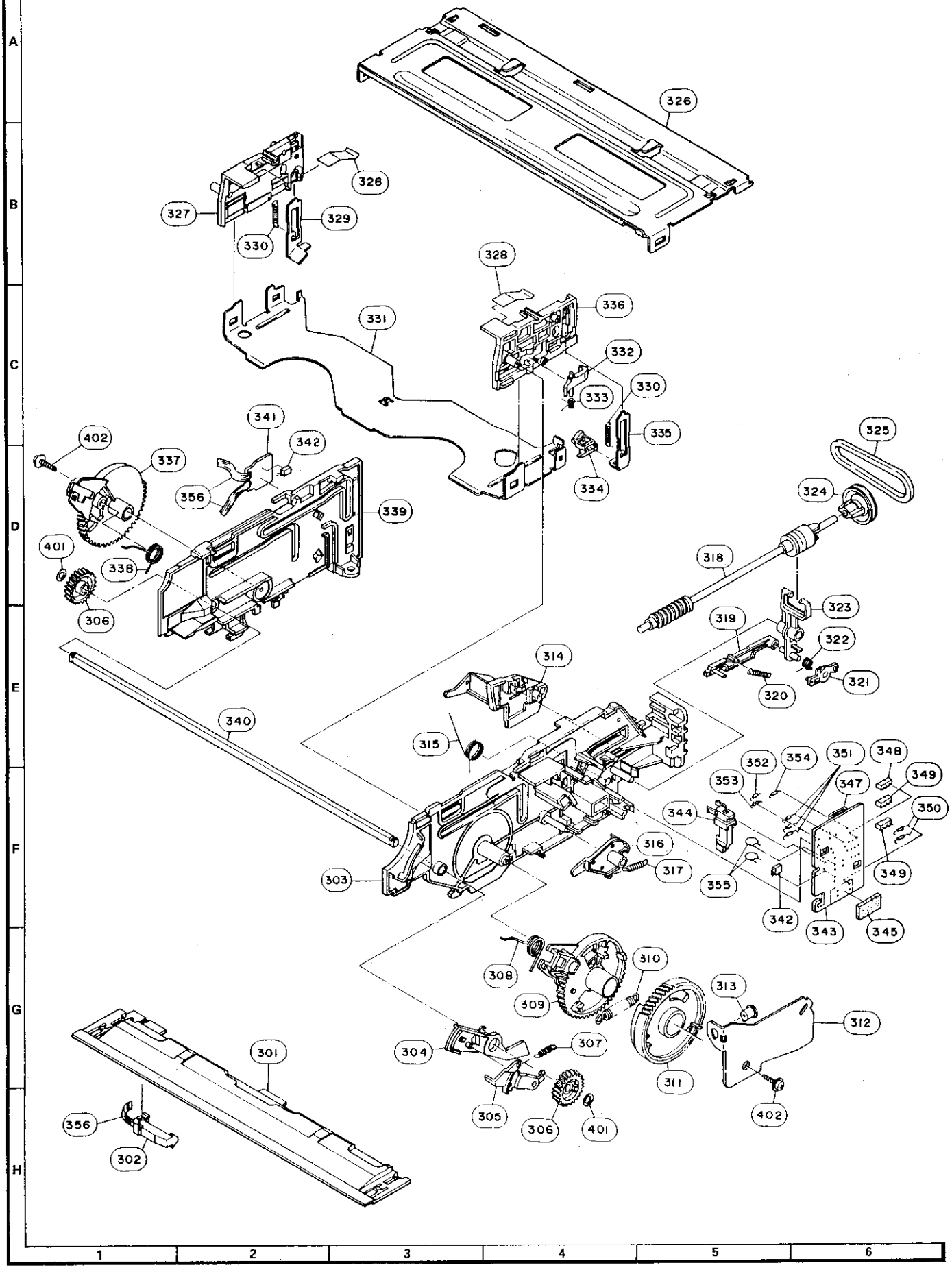
FRONT PANEL PARTS

501	CPNLC1657TEV7	U	Front Panel Assembly	—
501-1	MSPRD0103GEFJ	J	Spring	AB
501-2	LHLDZ1662UMZZ	U	Holder	—
501-3	LHLDZ1663UMZZ	U	Holder	—
501-4	HDECQ0722UMSA	U	Cassette Compartment Cover	—
501-5	LHLDZ1661UMZZ	U	Holder	—
501-6	QEARP0272UMFW	U	Earth Plate	—
501-7	PCδVU9170GESC	J	Fluorescent Display Filter	AE
501-10	CBTN-2475TEV0	U	Power / Eject Button Ass'y	—
501-10-1	GCδVA1565UMSA	U	Power LED Cover	—
501-11	LHLDS1010UMZZ	U	Door Holder	—
501-12	GCδVA1425UMZZ	U	R / C Cover	—
501-13	HDECQ0682UMSA	U	Decoration Plate	—
501-14	HiNDP1769UMSA	U	Indication Plate (Inside the door)	—
501-15	TLABH0472UMZZ	U	Door Label	—
501-16	LANGF9404UM00	U	Angle	—
501-17	GDδRF1894UMSA	U	Door	—
501-19	JBTN-2449UMSA	U	Botton, DPSS	—
501-20	JBTN-2227UMSA	U	Button, Rec	—
501-21	HBDGB1005UMSA	U	Badge, "SHARP"	—
501-22	TCAUH3178UMZZ	U	Dew Caution Label	—
501-23	TLABZ0783GEZZ	J	Feature Label	AD
501-24	PSHEK0037GEZZ	J	D-Side Adh. Tape Left	AB
501-25	PSHEK0038GEZZ	J	D-Side Adh. Tape Right	AC

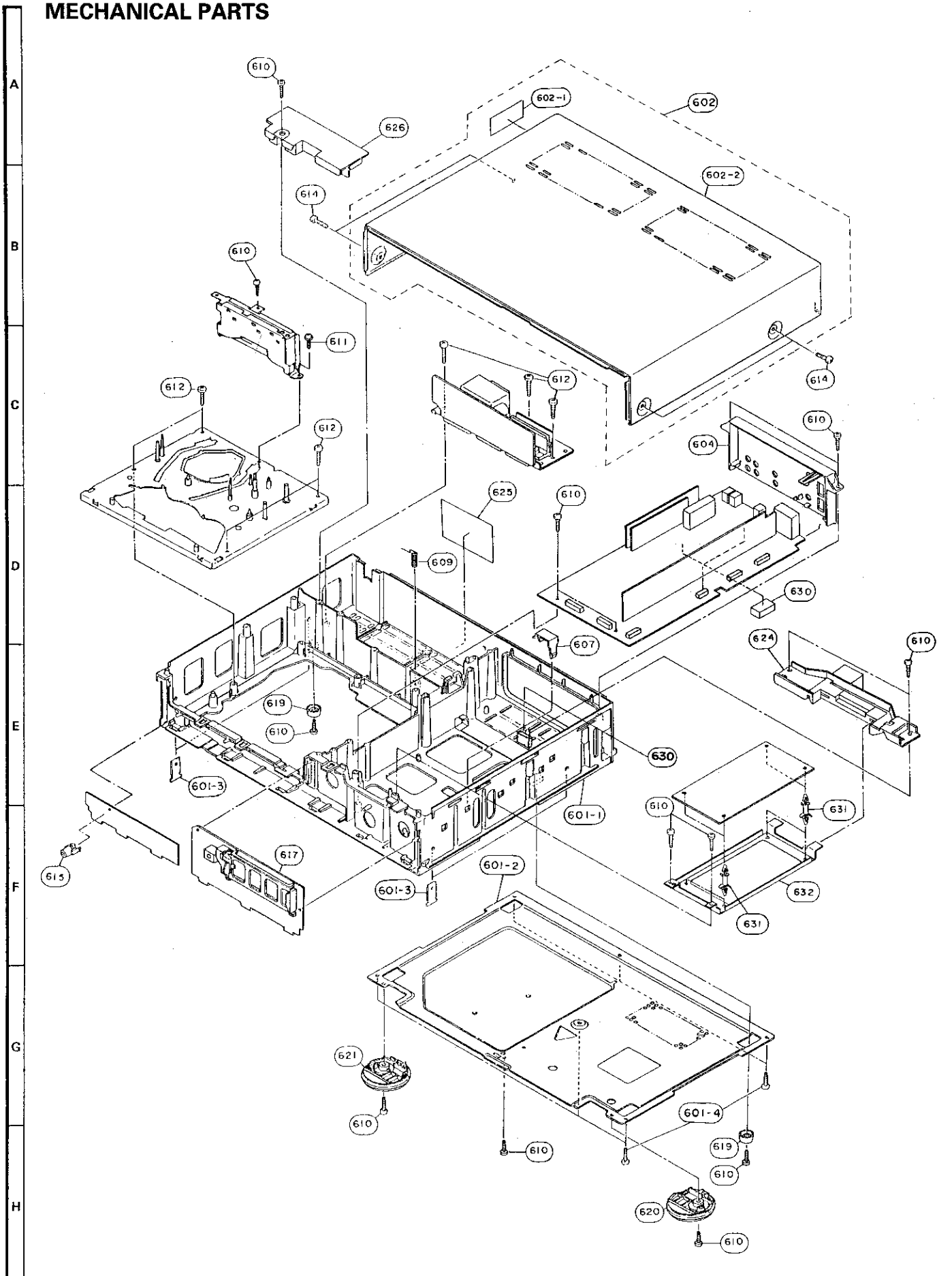
MECHANISM CHASSIS PARTS



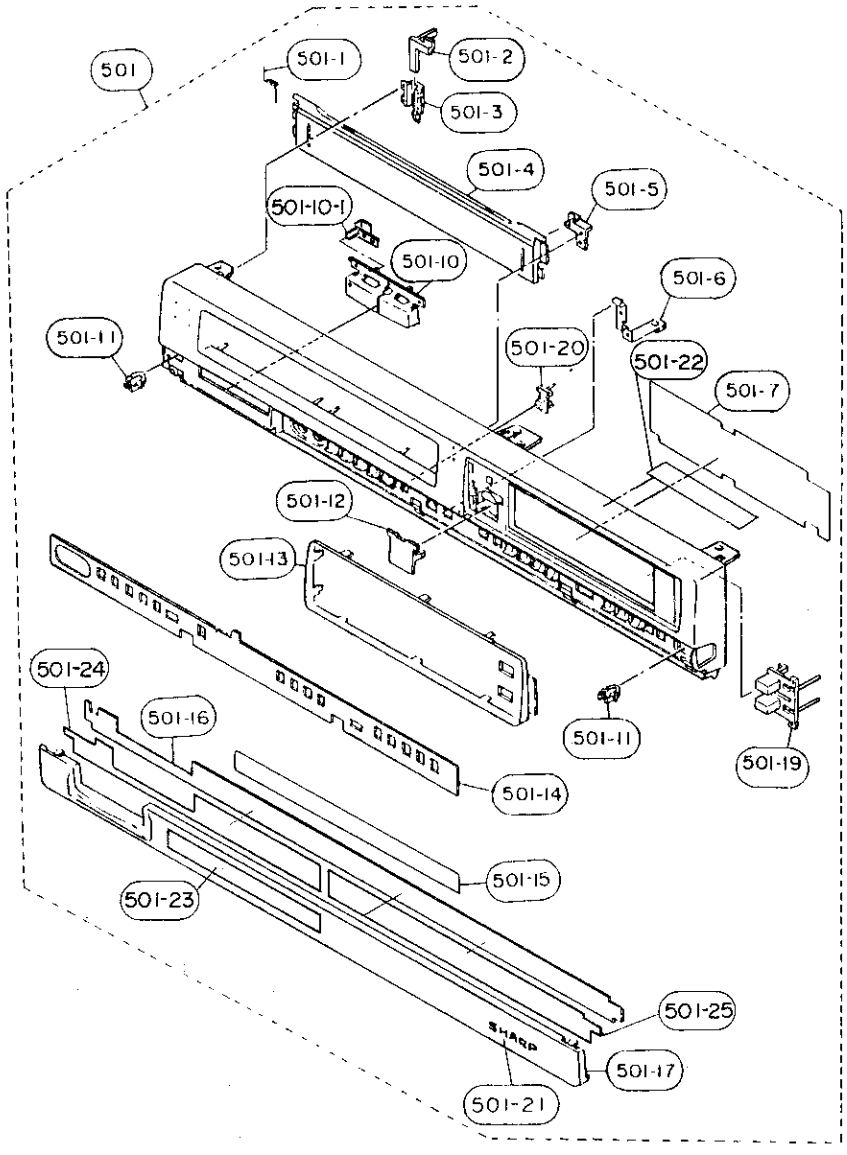
CASSETTE HOUSING CONTROL PARTS



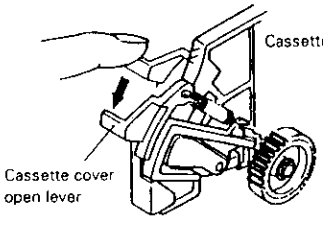
MECHANICAL PARTS



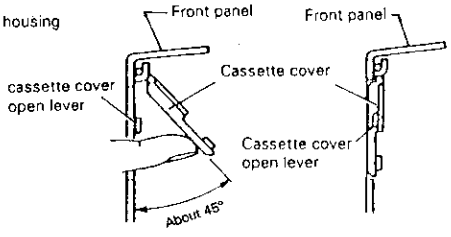
FRONT PARTS



PRECAUTIONS ON FRONT PANEL SET-UP

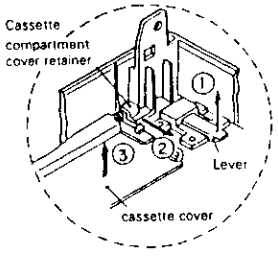


Before attaching the front panel in position, make sure that the cassette cover open lever is in its right place (lowermost). If it is out of position, push it down with a finger.



keep the cassette cover about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.

Do not mount the front panel with the cassette cover tilted too open. Otherwise the cassette cover might wrongly run on the cassette housing.



Removing the cassette compartment cover.

1. Lift up the lever in the direction of arrow ① to shift the cassette compartment cover retainer in the direction of arrow ②

2. Lift up the cassette compartment cover in the direction of arrow ③ and remove it from the front panel.

PACKING OF THE SET

● Setting position of the Knobs

NiCAM Switch	at "AUTO" Position	Picture tone	at "Center click" Position
RF Converter	at "36" channel	Test signal	at "OFF" Position

★ Accessories

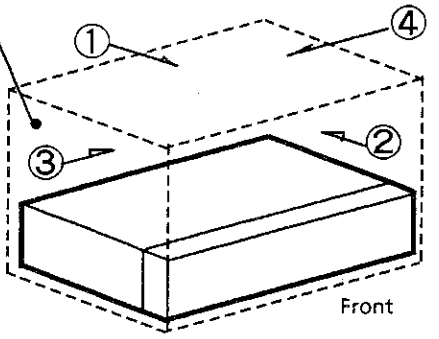
★ T i N S - 1728UMZZ Operation manual
★ QCNW-2702GEZZ Antenna cord
★ QCNW-6096GEZZ Audio cable

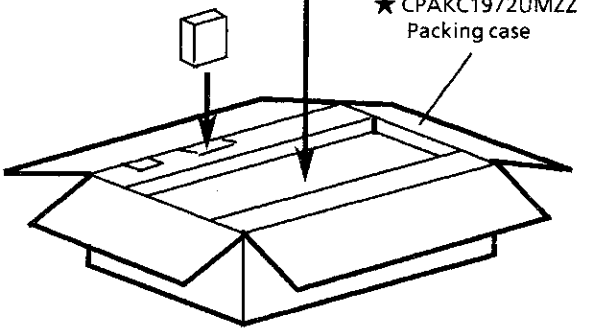
SSAKA0003UMZZ
Polystrene cover

★ SPAKA0074GEZZ
Polystyrene sack

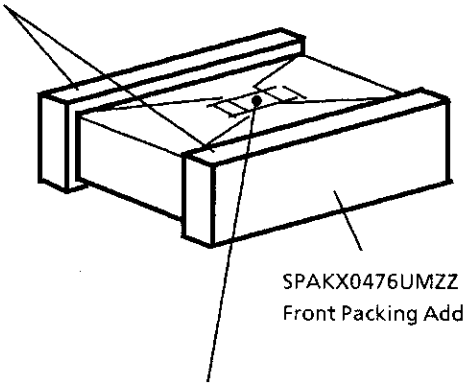
RRMCG0669UMSA
Infrared remote control unit

★ CPAKC1972UMZZ
Packing case



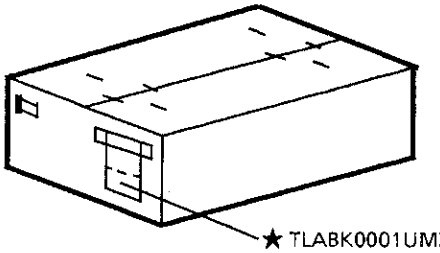


★ SPAKX0477UMZZ
Rear Packing Add



SPAKX0476UMZZ
Front Packing Add

Fix with craft tape
Mit Klebband festlegen



★ TLABK0001UMZZ
No. Card

★ Not Replacement Items